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Rhode Island Medical Journal

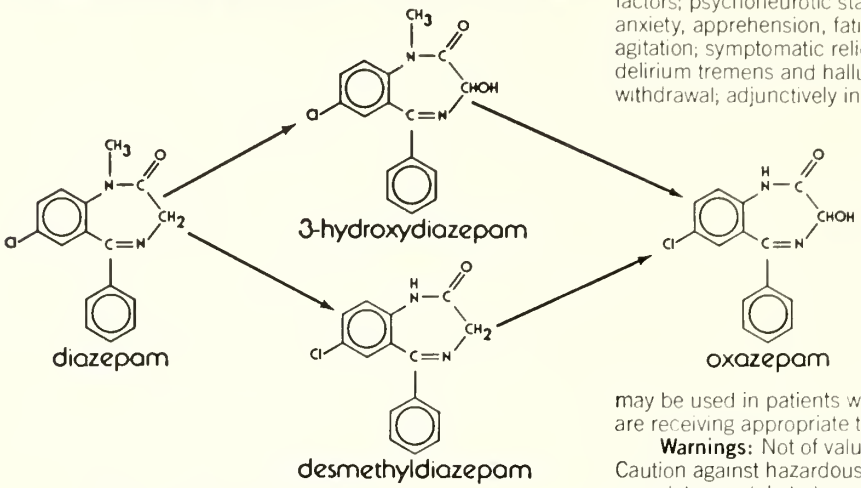
January, 1977 Vol. 60, No. 1



WHAT IS THE AMA DOING FOR YOU?

See Newsletter

A pharmacokinetic character all its own



Valium (diazepam) is a benzodiazepine with a distinctive pharmacokinetic profile

The pharmacokinetic profile of Valium is one of the characteristics that sets it apart from other benzodiazepines. Consider, in particular, the metabolic pathway of Valium. The three major metabolites of Valium exhibit significant pharmacologic activity—and so, of course, does the parent substance—diazepam itself. All combine to produce the characteristic clinical response seen with Valium. The response you have come to know, to want and to trust.

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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

Usage in Pregnancy: **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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Rhode Island Medical Journal

JANUARY, 1977 VOLUME 60, No. 1

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NEWSLETTER . . .

THE RHODE ISLAND MEDICAL SOCIETY

January, 1977

LACK FAITH IN AMA? LOOK AGAIN

A Message From The President . . .

It is difficult for me to understand why every active member of the Rhode Island Medical Society isn't a member of the American Medical Association. The AMA is the only national organization which represents all of us, regardless of our various specialty affiliations. When I ask a physician colleague why he or she hasn't joined, the reply almost always is: "The AMA doesn't represent me." My response to this comment is that if a person joined an organization only if he or she were in full agreement with its every position and policy, there would be no existing organization today. Since when did we *always* agree with our partner, our church or synagogue, our government, or even our spouse?

The AMA has been representing physicians and what is good for the public health since 1847. A few of the many recent worthwhile activities on our behalf are described below and on p. 4 of this newsletter. I urge you to support our national organization. The AMA is busy every day representing us in a myriad of activities, only some of which are legislative. Dues are $250 per year. Call the Executive Office at 331-3207 if you need a billing form or send your check into the RIMS. We will transmit it immediately to the AMA. Please join with us now so that we in Rhode Island may significantly contribute to AMA's efforts to retain a strong national voice for physicians.

Herbert F. Hager, M.D.
President

Just A Few Things
The AMA Is Doing For You

) THE AMA AND CONTINUING MEDICAL EDUCATION

Today, many states require evidence of continuing medical education for relicensure. It is safe to say that all states will soon have such requirements. More and more physicians, through their own initiative, are updating their medical knowledge and skills through CME.

The AMA increased its budget for continuing medical education programs in 1976 by $500,000. AMA sponsored courses qualifying for Category I credit toward the Physician's Recognition Award (which, incidentally, more than fulfills the three year RI requirement) has multiplied from 30 to 250 per year, covering all specialties. In 1976 ten regional and educational meetings were held in conjunction with state medical societies and medical schools. Fifteen more are planned for this year.

More than 58,000 physicians had been awarded the AMA Physician's Recognition Award (150 hours of CME over the preceding three years) through late 1976.

(Continued on page 4)

Professional Advisory Committee

Reelected by the House of Delegates as representatives to serve on the Professional Advisory Committee of Blue Shield, which consists of six physicians and six non-physicians were Doctors J. Robert Bowen, Joseph DiMase and John P. Grady. Doctors Joseph E. Caruolo, Robert V. Lewis and Kenneth Liffmann, members of the Blue Shield Board of Directors, are the other physicians on the Professional Advisory Committee.

Blue Shield Nominees Elected

In accordance with the bylaws of Blue Shield of Rhode Island, the House of Delegates, at its meeting of January 26, 1977 nominated four physicians to serve three year terms each as members of the board of directors. Named as nominees to the corporation were: Doctors Paul E. Barber, Kent County; Paul J.M. Healey, Pawtucket; H. Gerald Rock, Kent County; and Leonard S. Staudinger, Woonsocket.

Perinatal Committee Announces 3rd Annual Seminar

The Perinatal Committee of the Rhode Island Medical Society is holding its third annual seminar entitled "Current Concepts in Fetal and Neonatal Care" on Wednesday and Thursday, May 25 and 26, 1977 at the Marriott Inn, Providence, Rhode Island. Doctors Bertram A. Buxton and William W. Oh, Co-chairmen of the committee, announced that due to tremendous interest the program this year will run for one and a half days.

Doctor Lorand R. Brown, Program Chairman, stated that in addition to the usual luncheon a banquet, including dancing, will be held on the evening of May 25th. Workshops will be held on each day and it is advisable to make early reservations to assure that you may attend the workshops of your choice.

The Secretary Reports On Council Activities

Doctor Charles B. Round, Secretary of the Rhode Island Medical Society, reported that the Council had held two meetings since the previous meeting of the House of Delegates on October 6, 1976. Some of the actions taken were as follows:

1. Delegates to State Meetings

The President was authorized to appoint delegates to represent the Society at the annual meetings in 1977 of neighboring New England state medical associations.

2. AMA National Leadership Conference

The Council authorized the President to name four representatives to the fifth annual AMA National Leadership Conference (January, 1977).

3. Nominating Committee

The President was authorized to name a nominating committee to present a slate of nominees to the Board of Directors of Blue Shield.

4. Annual Report of the Treasurer

The annual report of the treasurer was received and placed on file subject to a professional audit.

5. RI Interagency Council on Smoking

As authorized by the Council, the President named Doctors Seebert J. Goldowsky, Melvin D. Hoffman and Robert Gorfine as the Society's voting delegates to the Interagency Council on Smoking.

6. Benevolence Fund Annual Report

The annual report from the Trustees of the Benevolence Fund was received and placed on file.

7. Next Council and House Meetings

The Council agreed that its next meeting be held on Monday, February 28, 1977 at the Hope Club beginning at 6 p.m. and that the next House of Delegates session be held on Wednesday, March 9, at 2 p.m. which will be followed by the Blue Shield Annual Meeting at 5 p.m.

8. Commendation of Doctor Robert V. Lewis

The Council acknowledged the distinguished service of Doctor Robert V. Lewis for his many years as a member of the Blue Shield Board of Directors.

9. Investment Program

The President was empowered to appoint a three-member committee chaired by the Treasurer to review periodically the Society's investments with the Industrial National Bank.

10. Commendation of Doctor Bruno F. Agnelli

The Council acknowledged the distinguished service over many years of Doctor Bruno F. Agnelli as the Councillor from the Washington County Medical Society. Doctor James A. McGrath was welcomed as Doctor Agnelli's successor.

House of Delegates

At its January 26 meeting, the House of Delegates of the Rhode Island Medical Society took the following actions:

Approved a $250 Society contribution to the Perinatal Committee in support of its seminar in March.

Approved a $250 Society contribution to the Medical Aspects of Sports Committee in support of its conference in July.

Approved representation in the House of Delegates for the Rhode Island Society of Nuclear Medicine.

Approved the appointment of Doctor John C. Lathrop to fill a vacancy on the Library Committee.

Approved the date of Wednesday March 9, 1977 (2 P.M.) for the next meeting of the House of Delegates immediately prior to the Annual Meeting of Blue Shield scheduled for 5 P.M. that day.

John H. Budd, M.D. To Address RIMS, May 11



hn H. Budd, M.D., President-ect of the American Medical As-ciation, will address the Society the Annual Meeting on May 11.

Governor Garrahy Asks Support For HEAT

Governor J. Joseph Garrahy has laun-ed a state-sponsored $300,000 fund ve to help purchase fuel for needy milies. The drive will attempt to gen-ate enough funds as soon as possible om private sources to help heat the mes of individuals and families with v incomes whose heating money has en exhausted. The volunteer fund-sing drive is being coordinated by Heat Emergency Action Team (HEAT). Governor Garrahy has asked public to send donations to

Post Office Box HEAT

Providence, R. I. 02904

ecks should be made payable to EAT. Physician contributions to this portant fund will be most welcome.

Califano Gets 95-1 Approval

Joseph Califano was sworn in as the new Secretary of Health, Education, and Welfare following Senate confirmation of his appointment by a 95 to 1 vote.

The Washington lawyer, who had been a chief domestic adviser to President Johnson, encountered no serious opposition. Only Sen. Bob Packwood (R. Ore.) opposed the nomination. Sen. Packwood argued that Califano was too strongly opposed to using federal funds for abortion and could not fairly administer federal Medicaid abortion programs as a result.

However, the leading lawmakers of both parties warmly endorsed Califano.

Sen. Jacob Javits (R. NY), echoing Sen. Packwood's concern about Califano's personal hostility to abortion financing by the government, said he would support the nominee nevertheless. "I feel we have the fortitude to vote for an excellent Secretary of HEW while standing our ground on the abortion matters as laid out by the Supreme Court," Sen. Javits told the Senate.

Califano had told the Senate Finance Committee that while opposed to abortion funding, he would abide by the law if the courts upheld continued use of Medicaid for abortion. He also said he was against a constitutional amendment to upset the Supreme Court's decision forbidding states to legislate against abortion except in the latter stages of pregnancy.

Medical Aspects Of Sports National Meeting

Doctor A.A. Savastano, Chairman of the Committee on the Medical Aspects of Sports announced that a National Meeting on the Medical Aspects of Sports will be held again this year in the Keaney Gymnasium of the University of Rhode Island on Thursday and Friday, July 14 and 15, 1977. This has always been an outstanding program attracting many from outside the Rhode Island area. All members of the Rhode Island Medical Society will be admitted at no cost.

Did You Know?

New England satisfies 81 per cent of its energy demands by petroleum (the most expensive energy source available), while the United States as a whole uses petroleum for only 47 per cent of its energy needs.

Our region satisfies only 9 per cent of its energy needs by natural gas while the United States uses natural gas for about 29 per cent of its energy needs.

The average cost of electricity in New England is 52 per cent higher than the United States average. Why? Because too much of our electricity is generated by petroleum.

Energy consumption in New England: Massachusetts consumes about 49 per cent of the total energy consumed in New England, Connecticut about 24 per cent, Maine 9 per cent, Rhode Island 8 per cent, New Hampshire 6 per cent, and Vermont 4 per cent.

Alaska is so big that the 21 smallest states in the United States would fit into it. It is so sparsely populated that, according to the National Enquirer, if New York City had the same ratio of residents per square mile, only 14 people would be living in Manhattan.

The average cost of keeping one of our Congressmen in Washington is now estimated at $489,000 a year.

Something To Say?

For some time, the American Medical News has been publishing "my opinion" articles. This forum, according to AMA, allows responsible spokesmen to discuss the many issues facing medicine at local and national levels. Past contributions have proven controversial, provocative and stimulating, the AMA adds. Contributions should be addressed to the Feature Editor, Dennis Breo, 535 North Dearborn Street, Chicago, Ill. 60610.

. . . . . THINGS THE AMA IS DOING FOR YOU

(Continued from page 1)

2) AMA FIGHTS FTC COMPLAINT ON PHYSICIAN ADVERTISING

In December, 1975, the Federal Trade Commission filed a formal complaint against the AMA, the Connecticut State Medical Society and the New Haven County Medical Association claiming that the AMA Principles of Medical Ethics restrain competition between physicians by forbidding solicitation of patients and, thereby, depriving patients of information about physicians.

In fighting to protect the interests and integrity of the profession, the AMA stated that the Principles of Medical Ethics are intended to discourage abusive practices which exploit patients and the public, and interfere with freedom in making an informed choice of physicians and free competition among physicians. The AMA's Judicial Council has pointed out that the above principles do not proscribe advertising; they proscribe the solicitation of patients. An administrative law hearing is scheduled for this coming June.

3) THE AMA AND PUBLIC LAW 93-641

The National Health Planning and Resources Development Act of 1974 (PL 93-641) is perhaps the most far-reaching health legislation ever enacted by the U.S. Congress. It gives the Secretary of HEW sweeping powers over nearly every aspect of health care including construction of facilities, purchase of equipment and methods of delivery. Doctor James H. Sammons, AMA's energetic Executive Vice-President, has called the legislation, "the single most potentially destructive piece of medical legislation ever enacted by Congress."

The AMA, the state of North Carolina, the North Carolina Medical Society, and the state of Nebraska have joined in a suit that focuses on the certificate-of-need provisions of the law and tests other aspects of its constitutionality. The case is now before a three-judge federal panel, an acknowledgment that the case raises important constitutional questions.

4) THE AMA AND MAXIMUM ALLOWABLE COST REGULATIONS (MAC)

The MAC regulations, which would govern the prescription of drugs for Medicare and Medicaid patients, intrude on clinical decisions made by physicians. Under MAC, a patient would receive the lowest priced generic drug unless his physician *certifies in writing* the medical necessity for a specific product. The AMA opposes the regulations because they assume therapeutic equivalence without clinical proof, and the regulations will clearly impede the necessary independent judgment of the physician and could adversely affect patient care.

Believing that economies should not be sought at the expense of quality care, the AMA has submitted legal briefs before a federal district court in Chicago challenging the regulations.

Annual Meeting

of

The Rhode Island Medical Society

MAY 11, 1977

AT THE

CRANSTON HILTON INN
CRANSTON, RI

CHAPIN ORATOR:
CARL W. WALTER, M.D.
Clinical Professor of Surgery, Emeritus, Harvard Medical School, Boston, Massachusetts.

Please circle the date on your calendar.

5) THE AMA AND THE KEOUGH PLAN

For those physicians who are concerned about what their national organization has done assisting physicians in financial matters, the AMA's significant involvement in the liberalized Keough Plan bears repeating. Thanks in good measure to AMA's aggressive leadership, the plan has been increased to allow annual contributions for retirement up to 15 per cent of earned income or $7500, whichever is smaller. Needless to say, this one single persistent effort of the American Medical Association, regardless of the individual physician's income, is far in excess of the $250 yearly AMA dues.

* * *

The above represent merely a few of the many actions which the AMA has taken on behalf of the medical profession and the public interest.

In addition to them, let us not forget that your AMA pressed federal court actions that forced withdrawal of the original utilization review regulations and issued a new policy on hospital-physician relations designed to protect the rights of medical staffs and the individual physician. It serves as a vigilante in Washington for the medical profession and the public alike, testifying and monitoring legislation affecting the practice of medicine and the health of our people.

Look what the AMA has done on the issue of national health insurance. It has taken the leadership in submitting a new bill that would still be largely implemented by the private sector and has effectively opposed a complete overhaul of our present health care system.

If you haven't done so already, I urge you to join the AMA and help sustain these efforts. Added benefits include the Journal of the American Medical Association (JAMA) and the specialty journal of your choice as well as an eligibility to participate in the Association's worthwhile insurance and retirement plans.

Herbert F. Hager, M.D.
President
Rhode Island Medical Society

BROWN UNIVERSITY

DIVISION OF BIOLOGICAL AND MEDICAL SCIENCES
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863-3231

CONTINUING MEDICAL EDUCATION CALENDAR

FEBRUARY

9 RECENT ADVANCES IN HEMATOLOGY. Topics and speakers will include: "Idiopathic Thrombocytopenic Purpura," Mario G. Baldini, M.D., Professor of Medical Science, Brown University; "On the Lysis of Cells by Complement — The Membrane Attack Mechanism," Manfred Mayer, Ph.D., Professor of Microbiology, Johns Hopkins University School of Medicine; "Immune Hemolytic Anema," John P. Leddy, M.D., Professor of Medicine and Microbiology, University of Rochester School of Medicine. Also, "Transformation Sensitization of Blood Cells," Herbert C. Lichtman, M.D., Professor of Medical Science; "Immune Neutropenia," James P. Crowley, M.D., Assistant Professor of Medicine, Brown University; and "Circulating Anticoagulants to Factor VIII," Maurice M. Albala, M.D., Director, Division of Clinical Hematology, Rhode Island Hospital. 1:00 P.M. to 5:00 P.M., George Auditorium, Rhode Island Hospital. A registration fee will be charged. For information, contact: Office of Continuing Medical Education, Brown University, Box G, Providence, RI 02912, or 863-3337.

11 "Rh Revisited — The History and Eradication of a Disease" (combined Pediatric Teaching Rounds), Philip Lanzkowsky, M.D., F.R.C.P., D.C.H., Professor of Pediatrics, School of Medicine of the Health Sciences Hospital, State University of New York at Stony Brook. Kay Auditorium, Roger Williams Hospital, 10:30 A.M.

16 Basic Science Lecture Series, "Joint Motion and Lubrication," Rosario Tomaselli, M.D., Orthopedic Staff, Rhode Island Hospital, 1:00 P.M., 7th floor Conference Room, A.P.C., Rhode Island Hospital.

23. Basic Science Lecture Series, "Electromyography," Henri L. Pache, M.D., Department of Rehabilitation Medicine, Rhode Island Hospital, 1:00 P.M., 7th Floor Conference Room, APC, Rhode Island Hospital.

MARCH

2 "LOCAL AND NERVE BLOCK ANESTHESIA IN ORTHOPAEDICS," Nalinkant A. Patel, M.D., Department of Anesthesia, Rhode Island Hospital. Basic Science Lecture Series, 1:00 P.M., 7th Floor Conference Room, Rhode Island Hospital A.P.C. Building.

2-3 "MINIMAL BRAIN DYSFUNCTION: A CLOSER LOOK." This course concerns changing concepts in the identification, management and long-term outcome of children with hyperkinesis and learning disabilities. The Marriott Hotel, Providence. For information contact the Office of Continuing Medical Education, Brown University, Box G, Providence, RI 02912.

9 "GENETIC DISORDERS," Siegfried Pueschel, M.D., Director, Child Development Center, Rhode Island Hospital. Basic Science Lecture Series, 1:00 P.M., 7th Floor Conference Room, Rhode Island Hospital A.P.C. Building.

16 "TOTAL KNEE REPLACEMENT," A. A. Savastano, M.D., Surgeon-in-Chief, Department of Orthopaedic Surgery and Fractures, Rhode Island Hospital, Basic Science Lecture Series, 7th Floor Conference Room, Rhode Island Hospital A.P.C. Building, 1:00 P.M.

18 "AUTOIMMUNITY AND THE ENDOCRINE SYSTEM," Angelo M. George, M.D., Professor of Pediatrics, Temple University Medical School; Chief, Endocrine and Metabolic Services, St. Christopher's Hospital for Children, Philadelphia. Roger Williams General Hospital, Kay Auditorium, 10:30 A.M.

23 "SEPTIC SHOCK," George H. A. Clowes, Jr., M.D., Director, Surgical Research, Rhode Island Hospital. Basic Science Lecture Series. 1:00 P.M., Rhode Island Hospital A.P.C. Building, 7th Floor Conference Room.

26-27 "THE TONGUE: WHAT CAN IT TELL US?" This symposium will explore the tongue's role in diagnosing various diseases and is open to physicians and dentists. Ress Auditorium, Barus Holley Building, George and Hope Streets, Providence. For information, contact the Office of Continuing Medical Education, Brown University, Box G, Providence, RI 02912.

30 "RADIOTHERAPY OF MALIGNANT SOFT TISSUE AND BONE TUMORS," Banice Webber, M.D., Department of Radiotherapy, Rhode Island Hospital. Basic Science Lecture Series, 7th Floor Conference Room, Rhode Island Hospital Ambulatory Patient Center, 1:00 P.M.

President's Page

LETTER TO NON-MEMBERS

By Herbert F. Hager, M.D.

I thought that members of the RIMS might like to see the text of a letter which I have sent to all non-member M.D.'s in Rhode Island. Glancing over the contents might remind members of some of the reasons they joined. It certainly makes sense that we all join together and provide a unified voice for physicians and our patients alike. If you know a colleague who is not a member of the state society, I would appreciate your encouraging him or her to join. Physicians should join the AMA for the same reasons mentioned in my letter to non-members, and I refer you to the Newsletter in this month's Journal for some of the many things the AMA is doing for us. The AMA deserves the full support of all Rhode Island physicians.

* * *

Dear Doctor:

Perhaps it has been often repeated but it is not overstated. The fact is that it behooves physicians more than ever before to join, support, and participate in the activities of their medical society. We are all too familiar with government incursions into the practice of medicine, and Public Law 93-641 (The National Health Planning and Resources Development Act) represents the latest and greatest intrusion yet.

Why should every licensed medical doctor join the Rhode Island Medical Society? Listed below are just a few good reasons:

1 — The Rhode Island Medical Society represents all Rhode Island Physicians in many important deliberations such as:

a) Legislation introduced into the General Assembly
b) The JUA (Joint Underwriting Association) which will have a great effect on the malpractice insurance rates physicians will pay
c) The Governor's Permanent Commission on Malpractice
d) The Blue Cross and Blue Shield Board of Directors
e) Regulations promulgated by the Department of Health
f) Numerous agencies relating to health care

2 — Perhaps the strongest reason for joining the Rhode Island Medical Society is that the Society is currently setting up the continuing medical education mechanism, mandated by the recently enacted malpractice legislation, by which physicians in Rhode Island will be relicensed. The Rhode Island Medical Society will establish CME standards and criteria, define the meaning of credits and make every effort to keep members abreast of information and courses available which will help them in securing the necessary documented CME credits at a minimum of inconvenience.

3 — Through membership in the Rhode Island Medical Society, physicians are eligible for the Society's specially written Blue Cross/Blue Shield Major Medical contracts and a Disability Insurance plan at a lower cost than can be obtained individually.

4 — The Rhode Island Medical Society provides its membership with the RHODE ISLAND MEDICAL JOURNAL, meetings, newsletters, and other helpful information on socioeconomic matters.

5 — Members are provided medical review in threatened malpractice actions.

6 — Complete services of one's own State Medical Society Library are available.

7 — Peer Review — Fair and equitable resolutions of disputes between physicians and third parties including specialty peer review opinions.

8 — The staff of the Rhode Island Medical Society answers numerous questions from the public, provides a public service and often is able to resolve unwarranted complaints against doctors obviating the need for meetings and letters, etc.

Ask yourself seriously if it is fair that a great majority of the physicians by means of their dues, time, and commitment, should

(Continued on Next Page)

provide a "free ride" for those who do not become members? Perhaps non members don't wish to serve the Society via committee assignments and time spent representing physicians, but they should at least be willing to pay their dues and show their support in that way. I recall years ago when John L. Lewis argued about a union shop with Benjamin Fairless, then President of US Steel. Fairless said that it was unfair to make a man join the union, but Lewis countered by saying that **it's wrong to have men getting the benefit of representation, etc. without giving a penny to support the union.** I think that Mr. Lewis made a good point and one which is germane to medical society memberships as well. Why should a great majority of physicians pay "extra" so that some can go free. If all physicians joined the Rhode Island Medical Society, in time we could probably reduce the dues.

Doctor, we want you and need your membership in the Rhode Island Medical Society. Whatever your past reasons might have been for not joining, I assure you that the profession and the public need your participation now more than ever before. It may be **our fault** that you are not a member. We may have neglected somehow to contact you. If so, this was not our intention and I urge you to join us now. Patients who call the Executive Office fail to understand why their physician is not a member of the RIMS. If there were no RIMS, I can assure you that you and the rest of our colleagues would find the practice of medicine to be far more difficult and the criticism of our profession to be far more prevalent. If not the AMA and RIMS, who else would preserve the professionalism of medicine?

I think that there are personal benefits to be derived from such a membership as mentioned above, but most important, I believe that we as physicians will benefit collectively from such an alliance. In addition, your Society strengthens your professional standing before the public. Please join us and we will welcome your comments, suggestions and criticism as much as your dues dollars.

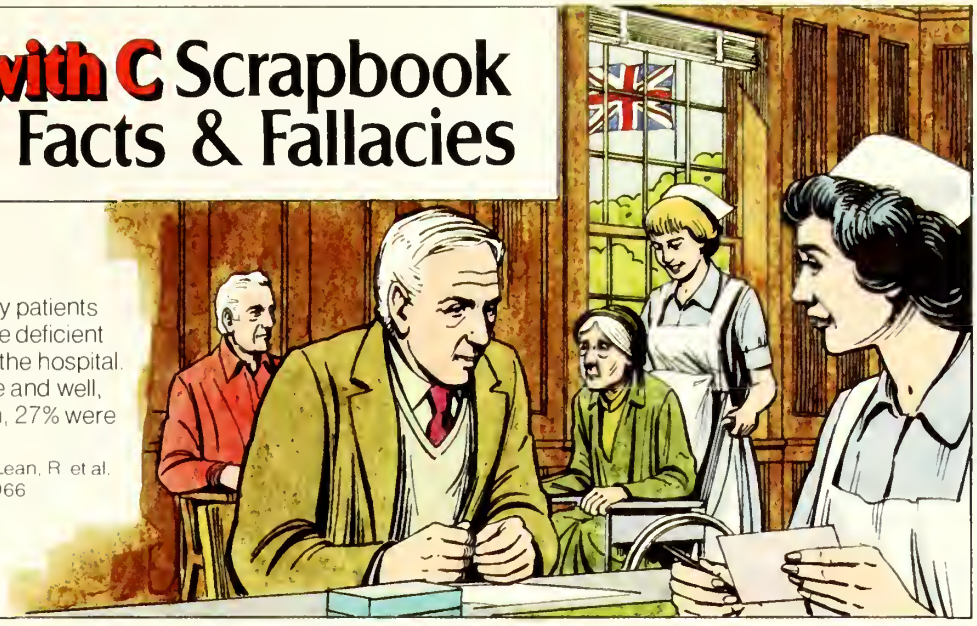
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HERBERT F. HAGER, M.D.
President

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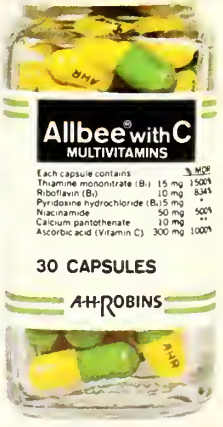
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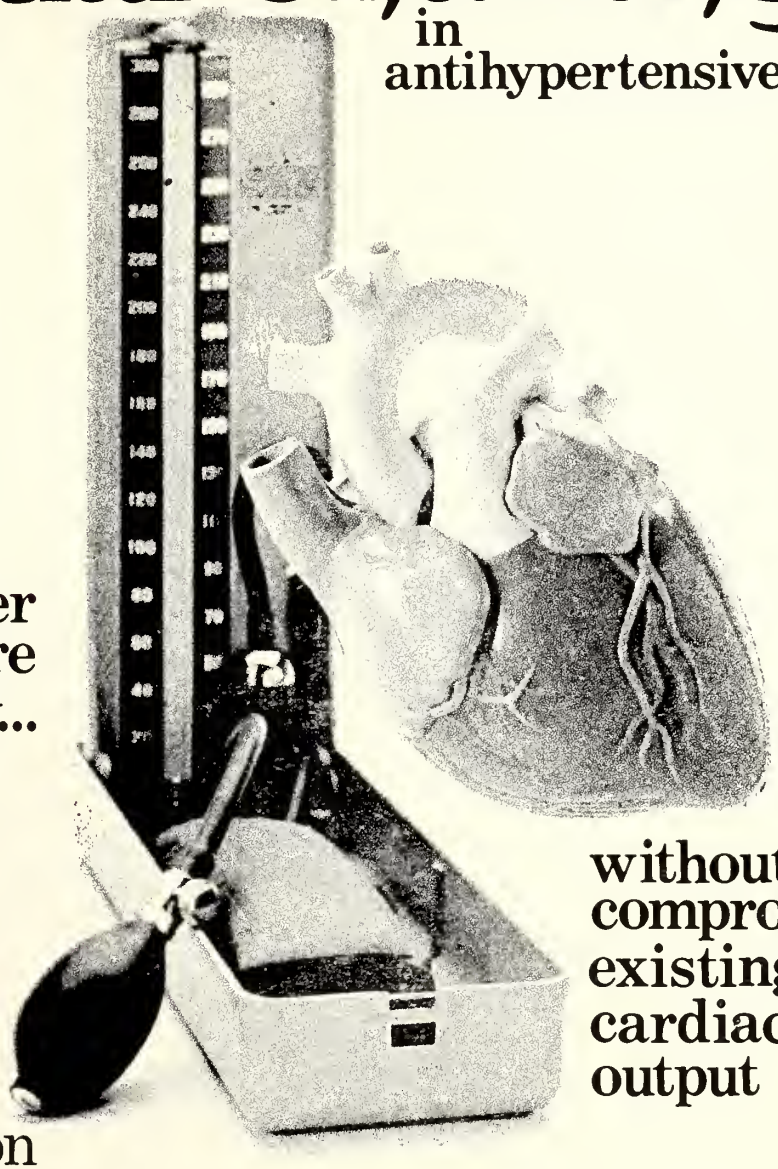
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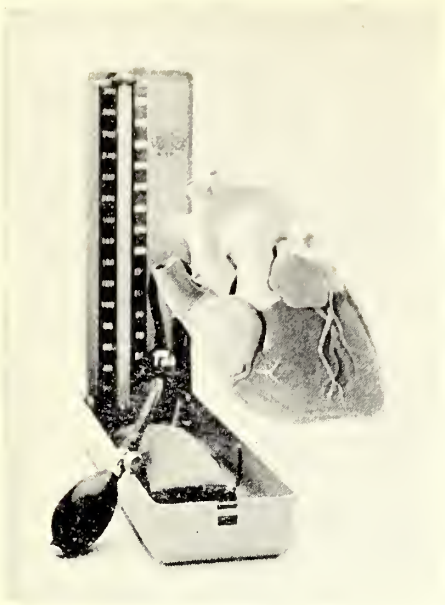
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Warnings: It is important to recognize that a positive Coombs test, hemolytic anemia, and liver disorders may occur with methyldopa therapy. The rare occurrences of hemolytic anemia or liver disorders could lead to potentially fatal complications unless properly recognized and managed. Read this section carefully to understand these reactions.

With prolonged methyldopa therapy, 10% to 20% of patients develop a positive direct Coombs test, usually between 6 and 12 months of therapy. Lowest incidence is at daily dosage of 1 g or less. This on rare occasions may be associated with hemolytic anemia, which could lead to potentially fatal complications. One cannot predict which patients with a positive direct Coombs test may develop hemolytic anemia. Prior existence or development of a positive direct Coombs test is not in itself a contraindication to use of methyldopa. If a positive Coombs test develops during methyldopa therapy, determine whether hemolytic anemia exists and whether the positive Coombs test may be a problem. For example, in addition to a positive direct Coombs test there is less often a positive indirect Coombs test which may interfere with cross matching of blood.

At the start of methyldopa therapy, it is desirable to do a blood count (hematocrit, hemoglobin, or red cell count) for a baseline or to establish whether there is anemia. Periodic blood counts should be done during therapy to detect hemolytic anemia. It may be useful to do a direct Coombs test before therapy and at 6 and 12 months after the start of therapy. If Coombs-positive hemolytic anemia occurs, the cause may be methyldopa and the drug should be discontinued. Usually the anemia remits promptly. If not, corticosteroids may be given and other causes of anemia should be considered. If the hemolytic anemia is related to methyldopa, the drug should not be reinstituted. When methyldopa causes Coombs positivity alone or with hemolytic anemia, the red cell is usually coated with gamma globulin of the IgG (gamma G) class only. The positive Coombs test may not revert to normal until weeks to months after methyldopa is stopped.

Should the need for transfusion arise in a patient receiving methyldopa, both a direct and an indirect Coombs test should be performed on his blood. In the absence of hemolytic anemia, usually only the direct Coombs test will be positive. A positive direct Coombs test alone will not interfere with typing or cross matching. If the indirect Coombs test is also positive, problems may arise in the major cross match and the assistance of a hematologist or transfusion expert will be needed.

Fever has occurred within first 3 weeks of therapy, sometimes with eosinophilia or abnormalities in liver function tests, such as serum alkaline phosphatase, serum transaminases (SGOT, SGPT), bilirubin, cephalin cholesterol flocculation, prothrombin time, and bromsulphalein retention. Jaundice, with or without fever, may occur, with onset usually in the first 2 to 3 months of therapy. In some patients the findings are consistent with those of cholestasis. Rarely fatal hepatic necrosis has been reported. These hepatic changes may represent hypersensitivity reactions; periodic determination of hepatic function should be done particularly during the first 6 to 12 weeks of therapy or whenever an unexplained fever occurs. If fever and abnormalities in liver function tests or jaundice appear, stop therapy with methyldopa. If caused by methyldopa, the temperature and abnormalities in liver function characteristically have reverted to normal when the drug was discontinued. Methyldopa should not be reinstituted in such patients.

Rarely, a reversible reduction of the white blood cell count with primary effect on granulocytes has been seen. Reversible thrombocytopenia has occurred rarely. When used with other antihypertensive drugs, potentiation of antihypertensive effect may occur. Patients should be followed carefully to detect side reactions or unusual manifestations of drug idiosyncrasy.

Use in Pregnancy: Use of any drug in women who are or may become pregnant requires that anticipated benefits be weighed against possible risks; possibility of fetal injury can not be excluded.

Precautions: Should be used with caution in patients with history of previous liver disease or dysfunction (see Warnings). May interfere with measurement of: uric acid by the phosphotungstate method, creatinine by the alkaline picrate method, and SGOT by colorimetric methods. Since methyldopa causes fluorescence in urine samples at the same wavelengths as catecholamines, falsely high levels of urinary catecholamines may be reported. This will interfere with the diagnosis of pheochromocytoma. It is important to recognize this phenomenon before a patient with a possible pheochromocytoma is subjected to surgery. Methyldopa is not recommended for patients with pheochromocytoma. Urine exposed to air after voiding may darken because of breakdown of methyldopa or its metabolites.

Stop drug if involuntary choreoathetotic movements occur in patients with severe bilateral cerebrovascular disease. Patients may require reduced doses of anesthetics; hypotension occurring during anesthesia usually can be controlled with vasopressors. Hypertension has recurred after dialysis in patients on methyldopa because the drug is removed by this procedure.

Adverse Reactions: *Central nervous system:* Sedation, headache, asthenia or weakness, usually early and transient; dizziness, lightheadedness, symptoms of cerebrovascular insufficiency, paresthesias, parkinsonism, Bell's palsy, decrease mental acuity, involuntary choreoathetotic movements; psychic disturbances, including nightmare and reversible mild psychoses or depression.

Cardiovascular: Bradycardia, aggravation of angina pectoris. Orthostatic hypotension (decrease dai dosage). Edema (and weight gain) usually relieve by use of a diuretic. (Discontinue methyldopa edema progresses or signs of heart failure appea

Gastrointestinal: Nausea, vomiting, distention, co stipation, flatus, diarrhea, mild dryness of mouth, so or "black" tongue, pancreatitis, sialadenitis.

Hepatic: Abnormal liver function tests, jaundic liver disorders.

Hematologic: Positive Coombs test, hemoly anemia. Leukopenia, granulocytopenia, throt bocytopenia.

Allergic: Drug-related fever, myocarditis.

Other: Nasal stuffiness, rise in BUN, breast enlar ment, gynecomastia, lactation, impotence, decrea libido, dermatologic reactions including eczema a lichenoid eruptions, mild arthralgia, myalgia.

Note: Initial adult dosage should be limited 500 mg daily when given with antihypertensi other than thiazides. Tolerance may occur, usu between second and third month of therapy; creased dosage or adding a thiazide freque restores effective control. Patients with impa renal function may respond to smaller doses. S cope in older patients may be related to increa sensitivity and advanced arteriosclerotic vasc disease; this may be avoided by lower doses.

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The American College of Chest Physicians recently inducted MICHAEL A. PASSARO, M.D., Providence, as a new Fellow of the College.

* * *

DAVID O. WILLIAMS, M.D., Providence, has been granted Fellowship in the American College of Cardiology.

* * *

ROBERT P. DAVIS, M.D., Professor of Medical Science, Brown University, and Director of the Division of Renal and Metabolic Diseases, The Miriam Hospital, has recently participated in two National meetings dealing with problems of ethics in medicine. Dr. Davis was a keynote speaker at a symposium on "Psychosocial Aspects of the Life-Threatened Cardiovascular Patient, The Family and the Staff," and he was a commentator at the Conference in Philosophy, Law and Medicine held at Kalamazoo College in Michigan.

* * *

The following have been elected officers of the Rhode Island Hospital Officers' Association for 1976-77: MICHAEL J. FOX, M.D., President; DONALD A. UNDERWOOD, M.D., President Elect; KENNETH W. BURCHARD, M.D., Vice President; BRUCE P. ABBOTT, M.D., Secretary; STEPHEN FISH, Treasurer.

* * *

At a recent annual meeting of the medical staff of St. Joseph's Hospital, the following officers were installed: ERMINIO CARDI, President; HENRY J. ROBIDOUX, JR., M.D., President Elect; VINCENT DI CONTI, M.D., Secretary; PAUL BERNSTEIN, M.D., Treasurer; RICHARD TESTA, M.D., and KENNETH KNOWLES, M.D., Representatives.

* * *

Among physicians in attendance at the American Medical Association Clinical Convention held December 3-8, 1976 at the Sheraton Hotel in Philadelphia were WILLIAM J. MACDONALD, M.D., HERBERT F. HAGER, M.D., FRANK W. SULLIVAN, M.D., JOHN J. CUNNINGHAM, M.D., and SEEBERT J. GOLDOWSKY, M.D.

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Perspectives On Hospital Utilization

There Is Obvious Need For An Objective, Reproducible, Widely Applicable Means Of Measuring Quality Of Care

By Paul B. Metcalf, M.D., F.A.C.S.

"Average length of stay" (ALOS) as applied to groups of patients has in recent years become an ever more familiar phrase of hospital jargon. Less familiar are "discharge rate" (D/1000) and "days rate per thousand" (d/1000). Regulatory agencies, third parties, the media, and others of the clique and claque of habitual critics of the medical profession have increasingly referred to these statistical entities, singling out ALOS in the context of the rising costs of hospital care.

In October 1973 a publication from the Commission on Professional and Hospital Activities (CPHA) noted a marked difference in ALOS between Census Regions West (5.9 days) and East (8.0 days),[1] and commented editorially: "Assuming the quality of patient care in hospitals is generally equal in west and east, there arises the question of why average hospital stay in the east could not be cut by roughly one quarter without causing a decrease in the quality of care. . . ."

In Rhode Island (RI) a December 1974 press release,[2] announcing the so-called third party utilization review system, made reference to a difference in ALOS for fiscal 1973 between RI (8.4 days) and Census Region West (6.4 days) and at least tentatively implied that the new review system could lower RI ALOS to that of the West with projected savings to the state of $37,500,000 annually.

PAUL B. METCALF, M.D., F.A.C.S., *President, Pawtucket Medical Association.*

In July 1975 a Social Security Bulletin[3] analyzed differences in ALOS for Medicare patients 1969-71 by region, emphasing differences between West (10.0 days, 1971) and East (15.0 days, 1971). It was felt that multiple diagnoses versus single diagnosis, medical versus surgical management, and age differences did not explain the divergence in ALOS, although variations in availability of Skilled Nursing Facility (SNF) beds and "ratio of number of discharges to number of persons hospitalized" did have a consistent but inexact inverse relationship to ALOS.

On March 8, 1976 an official of the United States Department of Health, Education, and Welfare (DHEW) addressed the National Professional Standards Review Organization (PSRO) Council and presented fiscal 1974 data for Medicare patients comparing the various "active" PSRO areas.[4] It was envisioned that "longitudinal tables" embodying elements such as ALOS and costs would be employed in the future to "evaluate the effectiveness of the PSRO program."

An underlying theme of the observations above is that costs rise as ALOS increases and that, therefore, the way to lower costs is to decrease ALOS. In the minds of habitual critics of the profession the goal of drastically reducing ALOS can readily be achieved by regulatory means since, they allege, there are many "unnecessary" hospital days.

It seems most appropriate at this time to examine the interrelationships of the ele-

(Continued on Next Page)

ments involved in the statistics of hospital utilization, to elucidate variables affecting these elements, to project the likely effects of a regulatory review system, to relate elements and variables to various measures of cost, and finally to assess the validity of the various elements as criteria in comparisons of "effectiveness" of regulatory review systems between regions, hospitals, physicians, and patients.

BASIC RELATIONSHIPS

It is generally agreed that the major portion of annual medical expense arises from hospitalizations and that these costs are roughly proportional to hospital days expended per year, i.e.:

Cost varies with **days** per year, which equal **patients** (discharges or admissions) per year times **ALOS**, or

$\$ \sim d$, and

$d = D \times ALOS$

This equation may be related to population for comparative purposes in the form:

$\$$ per capita $\sim d/1000$, and

$d/1000 = D/1000 \times ALOS$

For the moment let us omit costs from consideration and examine the other factors in the equation as they interact. The data in Table 1 and Graph 1 are adapted from American Hospital Association (AHA) figures for fiscal 1973,[5] the year referred to in the 1974 local press release, and presumably have been uniformly derived.

It is quickly perceived from these data that ALOS and D/1000 tend to vary reciprocally and that the most reliable element of comparison is d/1000. That the bottom line element is d/1000 should not be unexpected when the original formula is recalled. The rather extreme variations in the other two elements does seem to require an explanation, and it is logical to seek clarification first in the known demographic differences between regions, i.e. age and fertility rate.

DEMOGRAPHIC FACTORS

The data shown in Table 2 and Graph 2 for calendar 1972 are adapted for the US (and the major census regions) from sampling studies published by the Health Resources Administration of DHEW[7] and for RI from Rhode Island Health Services Research Inc. (SEARCH) studies supplied to the Pawtucket Medical Association for other purposes.[8] The population bases for US (and the major census regions) are from then current estimates, but for RI they are from the US Census of 1970 (uncertainties of population estimates occasioned by the planned removal of US Naval installations from the state suggest that the certain population base of the census was more reliable for RI than current estimates). Table 2 and Graph 2 display utilization factors for all patients in short-stay, acute, general hospitals, exclusive of newborns and patients in federally funded institutions such as military and Veterans Administration hospitals. It will be seen that in general there is close similarity to the preceding.

Differences in degree from 1973 are noted and are in part due to the more appropriate population bases for the 1972 data. However, the general pattern is consistent, and d/1000 is the most valid comparative tool.

It is well known that fertility rates (live births per 1000 women aged 15-44 years) and distribution of population by age vary significantly from region to region. If statistical adjustment for these variables were made, a more appropriate comparison of utilization statistics between regions would be attained. In Table 3 and Graph 3 (adapted from the same sources as Table 2 and Graph 2) deliveries are excluded and age adjustment is made,[9] assuming that each region had the same distribution of age groups as the US, but that each region retained the same D/1000 and ALOS for each age group.

These adjustments tend to lessen the observed differences between regions. For example the difference between RI and the West based upon the US age distribution drops from 0.22 to 0.06 for d/1000 and ALOS from region to region. A possible, partial explanation is offered in the following section.

TRANSFER-READMISSION RATES

In 1975 DHEW noted differences between regions for Medicare patients in the number of admissions per year for each hospitalized patient[10] for 1967-68. The original tables are adapted in Table 4.

There were major changes in all elements between 1967 and 1968 with the notable exception of the transfer-readmission rate (D/#) and these differences ranged up to 10 per cent. This suggests that the transfer-

TABLE 1

UTILIZATION DATA BY REGION
Fiscal 1973

Utilization Measure / Region	d/1000*	D/1000*	ALOS
United States	1241.7	158.7	7.8
North Central	1340.8	162.6	8.2
East	1304.9	144.4	9.0
South	1235.9	169.3	7.3
Rhode Island	1111.3	130.3	8.5
West	999.2	153.4	6.5

*Population Bases from U.S. Census, 1970 (6)

Graph 1

Utilization Data by Region, 1973

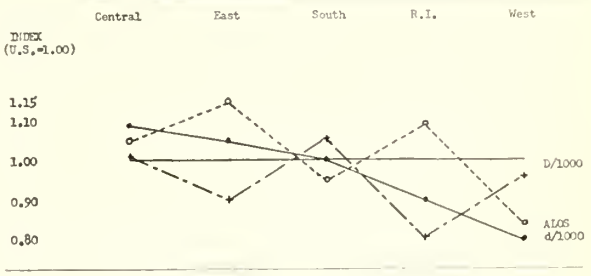


TABLE 2

UTILIZATION DATA BY REGION
Calendar 1972

Utilization Measure / Region	d/1000	D/1000	ALOS
United States	1199.9	154.9	7.7
Central	1329.1	166.3	8.0
East	1319.9	145.3	9.1
South	1168.2	160.7	7.3
Rhode Island	1142.7	131.6	8.7
West	881.3	139.3	6.3

Graph 2

Utilization Data by Region
Calendar 1972

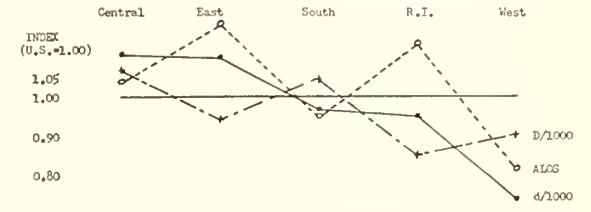


TABLE 3

UTILIZATION DATA BY REGION
Deliveries excluded,
Age adjusted to U.S.
Calendar 1972

Utilization Measure / Region	d/1000	D/1000	ALOS
United States	1134.5	138.9	8.2
Central	1259.3	150.1	8.4
East	1208.8	128.1	9.4
South	1110.0	143.8	7.7
Rhode Island	925.4	101.4	9.1
West	860.8	127.2	6.8

Graph 3

Utilization Data by Region
Deliveries Excluded,
Age Adjusted to United States
Calendar 1972

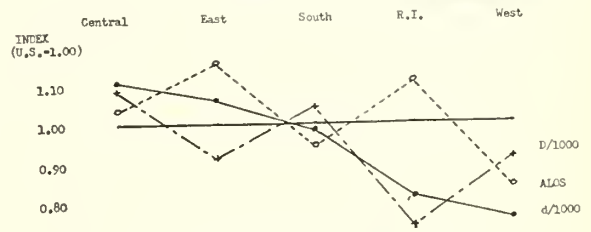


TABLE 4
UTILIZATION DATA BY REGIONS FOR MEDICARE PATIENTS, 1967 and 1968

Region	# /1000	D/1000	ALOS	d/1000	D/#
			1967		
United States	189.0	261.7	13.8	3607	1.38
Central	200.0	276.6	14.6	4052	1.38
East	167.8	217.4	16.1	3501	1.30
South	196.5	282.9	12.3	3474	1.44
West	189.9	267.7	11.8	3151	1.42
			1968		
United States	207.4	286.9	13.8	3948	1.38
Central	215.8	297.2	14.6	4334	1.38
East	186.9	241.7	16.2	3922	1.29
South	218.7	315.1	12.4	3910	1.44
West	204.5	290.7	11.4	3310	1.42

TABLE 5
UTILIZATION DATA FOR MEDICARE PATIENTS 1974
AS MODIFIED BY 1968 D/# RATIOS

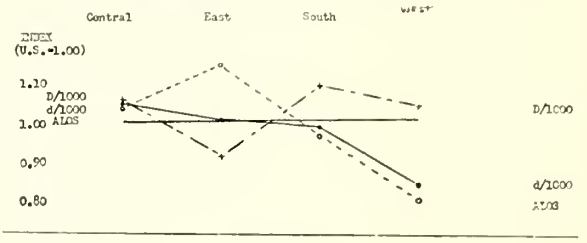
	D/1000	D/#	D/1000i	d/1000	ALOS	ALOSi
United States	271.6	1.38	196.81	2997.0	10.5	15.23
Central	288.5	1.38	209.05	3108.8	10.8	14.87
East	246.4	1.29	191.03	2957.6	12.0	15.48
South	295.0	1.44	204.88	2946.3	10.0	14.38
West	279.7	1.42	196.97	2321.1	8.3	11.79

readmission rate may be a relatively constant factor for each region. Therefore a comparison of 1974 Medicare data[4] modified by the 1967-68 D/# is a reasonable and productive examination of trends. For this purpose we derive **individual** patient discharge rates/1000 (D/1000i) and average individual patient hospital days used (ALOSi) by dividing D/1000 by D/# to give D/1000i and dividing d/1000 by D/1000i to give ALOSi. These values are given in Table 5.

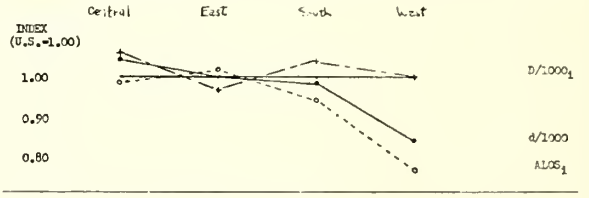
Graphs 4 and 5 display these data, and it will be seen that corrections for D/# greatly dampen the wide variations for the D/1000 and ALOS between regions. As in previous illustrations the three factors (recorded in relation to US data as an index of 1.00) are closely clustered in Central; D/1000 and ALOS vary widely in East and South, and the three diverge in West. Adjusting for the transfer-readmission rates (D/#) to consider **individuals** discharged per year per thousand population (D/1000i) and days of hospitalization per year for those individuals (ALOSi), Graph 5 as compared to Graph 4 shows slight divergence in Central; marked convergence in East and South, and slight convergence in West. If the regional readmission-transfer rates for 1974 did indeed approximate those for 1968, it would seem that the rates of hospitalization for individuals varied but 9 per cent (compared to 29 per cent unadjusted). In other words the management of and the hospital requirements of Medicare patients across the country may not vary greatly with the one exception of length of hospitalization in the West.

Before looking further into this West variance, it seems important to expand in more detail upon the potential effects on the normal hospital utilization statistics of a high readmission/transfer rate.

Graph 4
Utilization Data by Region, Medicare Patients, 1974



Graph 5
Utilization Data by Region, Medicare Patients, 1974 Corrected for Differences in D/#



EFFECT OF HIGH READMISSION/TRANSFER RATE UPON D/1000 AND ALOS

The following hypothetical example suggests that, where marked differences in D/# occur, there may be significant distortion of the usual hospital statistics by disease group and operation group from one region to another.

(Continued on page 32)

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Treatment Of Snakebite

Never Be Optimistic About A Snakebite

By W. E. Lockhart, Jr., M.D., F.A.A.F.P.

Doctors dread responsibility for snakebite. Methods have been confused in controversy, and medicolegal hazard is high. Most cases can be managed successfully, but even today there are snakebites that — despite the best of care — result in permanent crippling. These cases have a definite pattern which the doctor must know.

In about 90 per cent of rattlesnake envenomations the venom is deposited externally to the deep fascia in the subcutaneous tissue. Within two hours after the bite most of this venom can be removed by en bloc elliptical **excisions** through skin and superficial fascia straight down to the deep fascia. Venom will be observed to be in a pearl-like capsule or dispersed in the interstitial spaces of the subcutaneous fat.[1] In every instance the deep fascia must be incised so that subfascial tissues can be observed directly to exclude subfascial envenomation. The elliptical excisions are done under local infiltration anesthesia under surgical conditions. The ellipse is one or two inches in length and is more easily closed secondarily if placed somewhat transverse to the length of the extremity, but the fascial incision must be vertical so that tension in a deep muscle compartment can be released. If this procedure succeeds in removing all or most of the venom, this may be all that is required and would be extremely valuable to a patient who cannot take antivenin. Most cases do not require antivenin, which has serious disadvantages.

In about 10 per cent of rattlesnake envenomations the fang penetrates skin, subcutaneous tissue and the **deep fascia** to deposit venom in a subfascial space. This is a more dangerous situation, besause valuable nerves, arteries, veins, muscles, and tendons beneath the deep fascia are exposed to venom, and damage to these may result in permanent disability.

Intravascular envenomation is rare in the human subject and may cause death, which may also be due to venom-altered lipid metabolism.

Whereas subcutaneous envenomation results in prompt, severe, and observable signs of pain, swelling, skin discoloration, and bleb formation — which alerts the surgeon and leads to prompt, adequate treatment — **subfascial** envenomation on the first day may show little pain, swelling, skin discoloration, or bleb formation. The surgeon is lulled into

(Continued on Next Page)

DOCTOR LOCKHART *practices in Alpine, Texas near Big Bend National Park.*

a false optimism during the early hours, which is the only time when treatment is effective. Meanwhile venom is destroying valuable, irreplaceable tissues. Permanent disability and a lawsuit loom as possibilities. The plaintiff lawyer has something to exhibit to the jury to bleed a liability settlement from the doctor's insurance.

These worst cases, although few in number, have a definite pattern. Usually there is little or no venom in the skin to warn the doctor, and venom is injected beneath the deep fascia. With the palm (or sole of the foot) firmly supported at the instant a fang is driven through thin skin, thin subcutaneous tissue and thin fascia the fang may pass through an interosseour space and deposit venom in the deep palmar (or plantar) space. If the bite is in or above the wrist (or ankle), venom may be deposited in a tendon or muscle compartment. Bites on the knuckles can deposit venom in the deep palmar (or plantar) space. In the absence of signs of envenomation in the early hours the surgeon is reluctant to make the difficult incisions necessary to debride and drain the deep palmar (or plantar) space. Thus the bite is neglected in the early hours when treatment is effective — next day the hand (or foot) is swollen with evidence of severe, irrecoverable damage.[2] Even when the surgeon is aggressive and makes the required incisions, debridement, and drainage and gives 10 or more units of Wyeth's antivenin* intravenously, some of these cases result in loss or severe crippling of hand (or foot). This should be made clear to the courts.

PREVENTION

More than 90 per cent of envenomations occur below the elbow or knee. Therefore, wearing heavy leather gloves and high-cut boots in the field will prevent most snakebites — especially the worst bites. The hands should never be placed where they cannot be seen, as under brush, boards, in a hole, or over a ledge in climbing. Hungry cats or pigs will drive rattlesnakes away from the premises.

*Wyeth Laboratories supplies combination packages of both Antivenin (Crotalidae) Polyvalent, equine origin (North and South American antisnake serum) and Antivenin (microcrurus fulvius) equine origin (North American Coral Snake Antivenin).

FIRST AID

Avoid exertion. Pack the extremity with **fresh**-water ice, which has a built-in thermostat of 0 degrees centigrade that makes freezing impossible. Although cryotherapy has proved inadequate as definitive treatment of snakebite,[3] it has no opponents as a first-aid measure. It relieves pain, delays activity and spread of venom, and immobilizes the patient. Secure transportation to the nearest hospital without delay. If possible call ahead and alert the hospital so that personnel and materials will be ready. If possible, kill the snake and take it to the hospital for identification. Avoid alcohol or any other drug which might depress respiration. Do not apply **any** tourniquet or constrictive band because, if tight, it would interrupt tissue perfusion, and, if loose or intermittent, it would cause capillary congestion in the bite area that would delay the entry of intravenous antivenin. Do not make **any** incisions. A proper incision is an elliptical **excision** with subfascial exploration, and this should be done under surgical conditions with local anesthesia only by a surgeon who knows the location of important nerves and blood vessels. Do not suck the wound by mouth or otherwise because this could not remove subfascial venom, and oral bacteria would seriously infect the wound. Do **not** administer antivenin in the field because antivenin should be administered **only** by the intravenous route, and an anaphylactic reaction to the horse serum could not be managed in the field.

EMERGENCY ROOM

Remove any tourniquet or restrictive band and any refrigerant. Diagnosis is important. Did a snakebite actually occur? The bite of an unseen mammal could resemble a snakebite, and this would bring up the possibility of rabies. A snakebite might be called a thorn wound, resulting in delayed treatment. Draw a sample of blood for a hemoglobin-hematocrit test and set aside this serum and also an anticoagulated sample for future crossmatching, which may become impossible due to red cell changes later. Hemoglobin should be monitored daily. The amount of urine should be monitored, and daily urinalyses done. If a bleeding problem becomes manifest, a plasma fibrinogen determination should be performed. Defibrination can occur even with

small snakes.[4, 5] Thus a routine plasma fibrinogen test is done during the first 24 hours. Give 5 per cent dextrose in lactated Ringer's solution by venoclysis at a rate depending on shock. If a systemic reaction is evident, add 1.0 g of methyl prednisolone to the clysis and repeat this as needed every one to four hours. If breathing is difficult, give oxygen by mask and prepare for assisted respiration, which may require tracheal intubation. Anticipate respiratory paralysis and other neuro-metabolic disturbances, such as vomiting, in bites of the coral snake or the Mojave rattlesnake. The latter, **C scutulatus,** is identified by two large, smooth plates between the eyes, contrasting with the granular areas between the eyes of **C atrox.** The "coon" tail of the Mojave has thinner black rings than the atrox. Mojave venom is very deadly, and some sub-species may not be covered by Wyeth's antivenin. The coral snake, **M fluvius,** may have "red on yellow to kill a fellow," but it may also be albino or solid black.[6] The bite of the coral snake is not locally destructive. It is not covered by Wyeth's antivenin, but a special antivenin is available at Poison Control Centers. Cottonmouth and copperhead bites are locally destructive and should be treated in the same manner as rattlesnake bites. They are covered by Wyeth's antivenin.

MEDICAL MANAGEMENT

An intradermal injection of 0.1 ml of the 1:10 horse serum supplied with the antivenin could cause anaphylaxis in a hypersensitized patient. Therefore, first perform a skin-scratch and conjunctival test before giving the intradermal injection. If the intradermal test is positive, give antivenin — if at all — very cautiously with 1.0 ml of 1 per cent phenylephrine ready for intramuscular injection if urticaria, asthma, or anaphylaxis should occur. Antivenin should be administered **only** by the intravenous route because by this route it could be promptly stopped. Many patients are allergic to horse serum who have never had a previous injection — possibly due to contact with horse dander or to the eating of horse meat. The amount of antivenin should be decided by the estimated amount of venom in the patient's tissues — not by the weight of the patient. A child will require as much antivenin as an adult, but care must be taken not to overload the circulation of the child. Tolerance of antivenin may be improved by simultaneous intravenous administration of methyl prednisolone. There is no evidence that the steroid interferes with the antivenin-venom reaction — as does cold therapy. Never apply cold to the wound during antivenin administration. Many patients cannot take horse serum antivenin, and most patients will develop serum sickness after antivenin. There is not time for desensitizing procedures in treating snakebite. If defibrination occurs, 6.0 g of commercial fibrinogen should be given together with fresh, whole blood.[4, 5] There is great need for biologic material that will neutralize venom in tissues. It is important that there be no interference with tissue perfusion or congestion due to a tourniquet, as this would interfere with entry of antivenin into the central area of envenomation. The patient must be immunized to tetanus, and antibiotics are given to prevent or control infection. Anesthesia or any analgesia that might depress respiration should be avoided during the early hours of a bite.

SURGICAL MANAGEMENT

Time is of the essence! Two hours after the bite treatment, although still valuable, becomes less effective. The final outcome will depend on the remaining vascularity of the extremity. Therefore there must be no impairment of perfusion and no injury to important blood vessels. The surgeon must know the location of nerves and blood vessels and avoid injuring them. It is important that the bite be opened up at the earliest possible time, thoroughly debrided,[4, 5] and drained. The wound should not be sutured until drainage has ceased. If vascularity has been preserved and if the envenomation is opened up and debrided, it is incredible how natural defenses can expel venom and venom-damaged tissues in the days that follow.

Subcutaneous envenomation is managed by elliptical excision, but in every instance the deep fascia must be incised to explore for venom beneath. The fascial incisions are usually one or two inches in length, but if there is delay in treatment or a large, toxic envenomation has occurred in a muscle compartment, vertical incisions in the fascia

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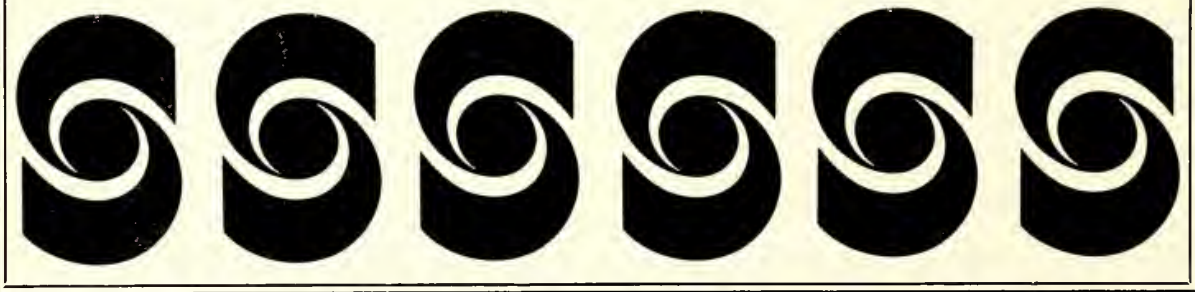
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Theophylline Derivatives: A Current Review

With Improved Understanding Theophylline Preparations Can Be More Judiciously Utilized

By Gerald E. Meyer. Pharm. D.; Louis P. Jeffrey, M.S.; George K. Boyd, M.D.; Charles D. Mahoney, M.D.; and Philip N. Johnson, Ph.D.

Theophylline and its derivatives — aminophylline, oxtriphylline, and dyphylline — are potent bronchodilators commonly utilized in the treatment of asthma. Subsequent to the initial report of the usefulness of aminophylline in treating bronchospasm in 1937,[1] the use of these xanthine derivatives increased dramatically. However, in the 1960's their popularity declined due to several reports of mortality in children.[2-6] These reports resulted in a more conservative use of theophylline, with the result that less-than-therapeutic dosages were being prescribed. This conservative approach continues in present day practice. Indeed, nearly 40 years after aminophylline was found useful for bronchospasm, there remains a poor understanding of its use.

There are several factors that contribute to the confusion. A primary problem is the existence of numerous theophylline salts. Theophylline, aminophylline, oxtriphylline, and dyphylline all differ on a milligram basis as to their content of anhydrous theophylline. Therefore, a preparation containing 200 milligrams of aminophylline will not offer the same therapeutic response as one containing 200 milligrams of theophylline.

A second major factor is the route of administration employed. Theophylline preparations are commonly administered intravenously; orally as tablets, elixirs, or solutions; and rectally as suppositories or enemas. Surprising differences in effectiveness and toxicity exist among these various routes of administration.

A third factor serving to cloud the issue is the increasing number of combination products appearing on the market. There is considerable debate about the advantages and

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disadvantages offered by the addition of sympathomimetic agents and expectorants to theophylline-containing products.

It is with these factors in mind that this paper is presented. We hope that it will produce an improved understanding of theophylline preparations.

PHARMACOLOGY

Theophylline, caffeine, and theobromine are classified as methylxanthines. These preparations stimulate the central nervous system, act on the renal system to produce diuresis, stimulate cardiac muscle, and relax smooth muscle, most notably bronchial muscle. Theophylline produces a higher degree of smooth muscle relaxation than theobromine or caffeine.[8] Thus, it has evolved as the methylxanthine of choice for conditions associated with bronchospasm.

THE BETA-RECEPTOR THEORY

In a landmark publication Szentivanyi[9] proposed what he termed the Beta Adrenergic Theory of Atopic Abnormality in Bronchial Asthma. He theorized that asthma may be due to an inherited or acquired abnormality at the beta adrenergic receptor site which is responsible for relaxation of smooth muscle.

Szentivanyi proposed that, in the presence of magnesium, adenyl cyclase converts adenosine triphosphate (ATP) to cyclic 3'5' AMP which mediates beta adrenergic responsiveness. Another enzyme, phosphodiesterase, is responsible for the inactivation of cyclic 3'5' AMP to 5' AMP. Therefore, any drug that increases the amount of cyclic 3'5' AMP will cause bronchial dilation. He further proposed that the sympathomimetic amines increase cyclic 3'5' AMP by stimulating the production of adenyl cyclase; whereas, the methylxanthines cause bronchodilation by inhibiting the production of phosphodiesterase and thereby decreasing the rate of degradation of cyclic 3'5' AMP. Although not unequivocally proven, the Beta Adrenergic Theory remains the accepted explanation for the mode of action of the methylanthines in the treatment of asthma.

PREPARATIONS

The most confusing aspect of theophylline therapy is the number of salts that are marketed, each with a different percentage of anhydrous theophylline. For instance, one tablet of Tedral® contains 130 milligrams of anhydrous theophylline; whereas, one tablet of Verequad® contains 130 milligrams of theophylline calcium salicylate — equivalent to only 62.5 milligrams of anhydrous theophylline. Therefore, although both preparations appear at first glance to be similar, in actuality a patient would need to take two Verequad® tablets to get the equivalent dose of anhydrous theophylline present in Tedral.® There are at least eight different theophylline salts presently on the market, each with a different percentage of anhydrous theophylline (Table I). No one derivative offers any significant advantage when prescribed in equivalent doses of anhydrous theophylline.

TABLE I

	% Anhydrous Theophylline
Theophylline, Anhydrous	100
Theophylline Ethylenediamine (Aminophylline)	86
Theophylline Ethanolamine	75
Theophylline Isopropanolamine	71
Dihydroxy Propyl Theophylline (Dyphylline)	70
Choline Theophyllinate (Oxtriphylline)	64
Theophylline Sodium Acetate	55-65
Theophylline Sodium Glycinate	49-52
Theophylline Calcium Salicylate	48.1

ROUTES OF ADMINISTRATION

Intravenous. Intravenous administration of aminophylline is an effective treatment for severe asthmatic attacks. It may be used alone or in combination with epinephrine or isoproterenol. In order to minimize the possibility of circulatory collapse, aminophylline should be diluted prior to administration. The use of a bolus dose followed by an intravenous infusion has been shown to be superior to the use of an infusion without a bolus. (A bolus may be prepared by diluting the contents of a 500 milligram ampul with a minimum of 50 milliliters of dextrose or saline solution.) Maselli, et al[10] administered a 4 mg/kg dose either over a four to five minute period or slowly over an eight hour period. Blood theophylline levels and the forced expiratory volume for one second (FEV_1) were determined at 15 and 30 minutes and one, two, four, six, and eight hours after administration of the drug was begun. The superiority of giving loading doses of aminophylline was demonstrated on clinical grounds by rapid improvement in FEV_1 and by prompt attainment of therapeutic concen-

trations of theophylline. The plasma level of theophylline in the group given infusions did not approach that of the bolus group until five hours later. In a recent report in **The New England Journal of Medicine**[7] a loading dose of 5.6 mg/kg followed by an infusion of 0.9 mg/kg/hr as a maintenance dose is recommended. The plasma theophylline concentration in 95 per cent of the patients on this regimen was approximately 10 mg/liter, which is considered a safe and effective level. This regimen appears to be a rational method of administering aminophylline intravenously.

Intramuscular. The administration of aminophylline intramuscularly should be avoided because of substantial pain upon administration.

Rectal. Theophylline may be administered rectally in either a suppository or retention enema. Suppositories offer the advantage of ease of administration; however, rectal absorption of theophylline from suppositories has been found to be erratic[12, 13]. Furthermore, the use of aminophylline suppositories has been implicated in severe toxicity and death in children.[2-6] Another significant shortcoming of this dosage form is the inability to titrate dosages. The clinician often may order "one-half suppository," while the patient actually receives closer to "one-third suppository" on some occasions and "two-thirds suppository" on others. Due to the unpredictable absorption, difficult dosage titration, and related toxicity the use of theophylline in suppository form should be avoided.

Retention enemas have been shown to be an effective means of administration with reliable absorption.[14, 15] Although aminophylline absorbed through the rectal mucosa reaches the lungs via the pulmonary circulation, gastrointestinal side-effects have been reported. [16] The major disadvantage of retention enemas is the difficulty of administration. Therefore, assuming that the patient has sufficiently recovered from a severe attack so as not to require intravenous therapy, the oral route of administration may be preferable.

Oral. When comparing the numerous oral preparations currently marketed, it is important to remember that there is a strong possibility of significant individual differences in absorption and metabolism of theophylline compounds.[13]

The superiority of oral administration over rectal administration was documented by Lillehei.[13] He showed that uncoated aminophylline tablets produced higher blood theophylline levels more rapidly than either suppository or retention enema. Waxler and Shack[12] also showed that the absorption of orally administered uncoated tablets of aminophylline was reliable. They further demonstrated that enteric coating of tablets made absorption less reliable.

The problem of generic equivalences of uncoated aminophylline tablets is very real. Although many drugs appear to differ in formulation among manufacturers,[17] the significance of the differences in absorption for most of them is minimal. However, for those drugs possessing narrow therapeutic indices (i.e., relatively close proximity of therapeutic and toxic levels) slight differences in absorption and metabolism can prove very significant. In order to overcome this problem physicians could prescribe aminophylline tablets as they do digoxin, phenytoin, and chloramphenicol. That is, they could prescribe it by a proprietary name of their choice. For example:

Rx Aminophylline Tablets
0.1 Gm.
(proprietary name)
Disp: #100
Sig: ii a6h for asthma

This type of prescription would help eliminate the problem of generic equivalence among oral tablets.

Another oral dosage form of theophylline is the elixir. It has been demonstrated that an alcohol-water solution of theophylline can achieve blood levels comparable to intravenous therapy within 15 to 30 minutes.[18] Oral tablets required 60 to 120 minutes to achieve comparable levels in this study. This is to be expected, since solutions bypass the dissolution phase of absorption. The elixirs, however, do have several disadvantages. They are relatively expensive when compared to the tablets, tend to have an unpleasant taste, require ingestion of relatively large quanti-

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ties to deliver a therapeutic dose, and contain large quantities of alcohol. In order to overcome this last problem, aqueous solutions — such as Slo-Phylline® — can be used. However, Koysooko, et al[25], have reported an increased incidence of nausea in patients receiving aqueous theophylline solutions as compared to those receiving hydroalcoholic solutions (elixirs).

COMBINATIONS

The use of theophylline combinations should be avoided! Taylor, et al[19] illustrated that the FEV_1 at zero and two hours for aminophylline given alone and ephedrine given alone was similar. No statistically significant improvement was noted when these drugs were given in combination. It appears that this combination offers no therapeutic advantages over an increased number of side-effects. By eliminating ephedrine from prescribed drugs, one can also eliminate other agents, such as hydroxyzine, which are added to counteract the side effects of ephedrine. The addition of expectorants — most commonly guaifenesin — to the theophylline preparations offers little therapeutic advantage. The best expectorant currently available is water, and it is more desirable to have a patient take his theophylline with a glass of water than to prescribe fixed combinations with less effective expectorants (Table II).

TABLE II

PRODUCT	ANHYDROUS THEOPHYLLINE EQUIV. (mg.)	OTHER INGREDIENTS
Aminophylline Tab 100 mg.	86 /tab	None
Brondecon Tab	130 /tab	Guaifenesin
Elixir	65 /5 ml.	
Bronkolixir	15 /5 ml.	Ephedrine
Bronkotabs	100 /tab	Guaifensin Phenobarbital
Choledyl Tab		
200 mg.	130 /tab	None
100 mg.	65 /tab	
Elixophyllin	80 /15 ml.	None
Fleets Brand Theophylline		
625 mg.	500 /rectal unit	None
312 mg.	250 /rectal unit	
Lufyllin Tab	140 /tab	None
Liquid	70 /15 ml.	
Marax Tab	130 /tab	Ephedrine
	32.5/tab	Hydroxyzine
Quadrinal Tab	62.5/tab	Potassium Iodide Ephedrine Phenobarbital
Quibron Cap	150 /cap	Guaifenesin
Elixir	150 /15 ml.	
Slo-phyllin Cap		None
250 mg.	250 /cap	
125 mg.	125 /cap	
Liquid	80 /15 ml.	
Tedral Tab	130 /tab	Ephedrine
Liquid	32.5/5 ml.	Phenobarbital
SA Tab	180 /tab	
Verequad Tab	62.5/tab	Ephedrine Guaifenesin Phenobarbital

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EFFECTIVE PLASMA LEVELS AND DOSAGES

The effective plasma level of theophylline appears to be 10 mcg/ml[20]; the range generally quoted is 10 to 20 mcg/ml of plasma [20 22]. Several dosage regimens have been proposed to attain these plasma levels. Jenne suggested that a dose of 0.3 grams every six hours be the starting regimen and that the dose be individually titrated utilizing either side-effects or plasma levels to adjust the dose. Neibergall, et al[23], utilizing the data of Jenne, proposed a regimen of 0.16 grams of theophylline every six hours to keep plasma levels between 10 and 16 mcg/ml. On a milligram per kilogram basis maintenance doses of 3.5 to 5 mg/kg every six hours have been advocated for some time. A recent report in a pediatric population[24] illustrated good response with minimal toxicity at 6 to 10 mg/kg every six hours. This aspect of therapy, therefore, remains in question.

TABLE III

RELATIONSHIP OF PLASMA THEOPHYLLINE CONCENTRATION TO CLINICAL EFFECTS

Concentration (mcg./ml.-	Efficacy	Toxicity
5)	minimal	—
10)	"	nausea, vomiting
20)	maximal	anorexia, headache
40)	"	arrhythmias
60)	"	convulsions

The toxicity of theophylline is related to dose and plasma concentration (Table III). Jenne, et al[21] found toxicity in several patients with plasma levels between 16 and 20 mcg/ml. The major adverse effects are nausea, vomiting, anorexia, headache, and abdominal discomfort. In most cases of toxicity the plasma concentration of theophylline exceeded 15 mcg/ml, and marked improvement was noted with a minimal reduction in dose.[26]

Of equal importance is the decided difference in metabolism and excretion of theophylline between adults and children. In adults theophylline has a mean plasma half-life of 4.5 hours, whereas the mean plasma half-life in a child is 3.6 hours.[26] Therefore, higher doses of theophylline are needed by a child than an adult to maintain therapeutic plasma levels.[27]. According to Strem, et al[27], as a child matures his theophylline dose requirement should decrease in accordance with this increased theophylline half-life. It is therefore advisable to determine theophylline plasma levels at the initiation of therapy and until a maintenance level has been achieved. In addition, theophylline levels should be monitored regularly so that it can be determined if dosage should be adjusted as age increases. Each patient must be individually titrated and maintained at a theophylline plasma level of approximately 10 to 16 mcg/ml to achieve the optimal therapeutic response.

SUMMARY

Theophylline and its derivatives are effective drugs for the treatment of asthma. Although extensively utilized, they remain poorly understood. Intravenous aminophylline should be used to treat severe asthmatic attacks with a bolus dose of 5.6 mg/kg followed by an infusion of 0.9 mg/kg/hr. Once the severity of the attack diminishes and intravenous therapy is no longer required, the patient should be switched to an oral form of theophylline. There is no significant difference among the various available salts, provided the dose is calculated on the equivalent amount of anhydrous theophylline. If tablets are used, they should be ordered by a proprietary name to allow for reliable and reproducible absorption. Elixirs or solutions can be used for patients who cannot take tablets. However, they are considerably more expensive, are less palatable, and must be taken in large amounts. Combinations offer no therapeutic advantage and should not be prescribed! Rectal administration should be reserved for those patients unable to tolerate any oral form. Retention enemas are preferred over suppositories. Blood levels should be maintained at between 10 and 16 mcg/ml. Current literature suggests doses of six to 10 milligrams per kilogram every six hours to achieve these levels.

It is hoped that, with an improved understanding, theophylline preparations can be more judiciously utilized and patient care can be improved.

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Warnings: Safety during pregnancy not established. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been reported and early clinical signs (sore throat, fever, pallor, purpura or jaundice) may indicate serious blood disorders. Frequent CBC and urinalysis with microscopic examination are recommended during sulfonamide therapy.

Precautions: Use cautiously in patients with impaired renal or hepatic function, severe allergy, bronchial asthma, in glucose-6-phosphate dehydrogenase-deficient individuals in whom dose-related hemolysis may occur. Maintain adequate fluid intake to prevent crystalluria and stone formation.

Adverse Reactions: *Blood dyscrasias* (agranulocytosis, aplastic anemia, thrombocytopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia); *allergic reactions* (erythema multiforme, skin eruptions, Stevens-Johnson syndrome, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis); *G.I. reactions* (nausea, emesis, abdominal pains, hepatitis, diarrhea, anorexia, pancreatitis and stomatitis); *CNS reactions* (headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo and insomnia); *miscellaneous reactions* (drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L. E. phenomenon). Due to certain chemical similarities with some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia. Cross-sensitivity with these agents may exist.

Dosage: Azo Gantanol is intended for the acute, painful phase of urinary tract infections. *Usual adult dosage:* 2 Gm (4 tabs) initially, then 1 Gm (2 tabs) B.I.D. for up to 3 days. If pain persists, causes other than infection should be sought. After relief of pain has been obtained, continued treatment with Gantanol (sulfamethoxazole) may be considered.

NOTE: Patients should be told that the orange-red dye (phenazopyridine HCl) will color the urine.

Supplied: Tablets, red, film-coated, each containing 0.5 Gm sulfamethoxazole and 100 mg phenazopyridine HCl—bottles of 100 and 500.

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efore prescribing, see complete prescribing information in SK&F Co. literature or PDR. A brief summary follows:

WARNING
This fixed combination drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual patient. If the fixed combination represents the dosage so determined, its use may be more convenient in patient management. The treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

dications: When the fixed combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive art failure, hepatic cirrhosis, the nephrotic ndrome. Corticosteroid and estrogen-induced ema, idiopathic edema; hypertension, when e potassium-sparing action of its 'Dyrenium' mponent is warranted.

ontraindications: Further use in progressive nal or hepatic dysfunction; hyperkalemia. Preisting elevated serum potassium. Hypersensiity to either component or other sulfonamidetived drugs. Routine use of diuretics in herwise healthy pregnancy.

arnings: Do not use potassium supplements, etary or otherwise, unless hypokalemia deops or dietary intake of potassium is markedly paired. If supplementary potassium is needed, tassium tablets should not be used. Hyperlemia can occur, and has been associated with cardiac irregularities. It is more likely in severely ill patients with urine volume less than one liter/day, the elderly or diabetics, with suspected or confirmed renal insufficiency. Periodic determinations of serum K^+ should be made. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **The presence of a widened QRS complex or arrhythmia in association with hyperkalemia requires prompt additional therapy.** Thiazides are reported to cross the placental barrier and appear in breast milk; fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and other adverse reactions that have occurred in the adult may result. When used in pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics, or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium® (triamterene, SK&F Co.), and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Do periodic blood studies in cirrhotics to check for nondrug-related variations in blood pictures, and in patients with folic acid depletion, since 'Dyrenium' may contribute to appearance of megaloblastosis. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

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Editorials

SNAKEBITE

Published elsewhere in this issue of the **Journal** is an up-to-date paper on the treatment of snakebite by Doctor William E. Lockhart, Jr., of Alpine, Texas, one of a dozen or so leading authorities in the field. Alpine is on the periphery of the majestic Big Bend National Park, prime rattlesnake country. In distant tiny Rhode Island rattlesnakes are rare (but by no means extinct). Coral snake bites, however, are not unheard of.

The points made in this paper that deserve emphasis are the inadequacy and dangers of the old-fashioned crosscuts and mouth suction, the effectiveness of elliptical wound excision, and the importance of fasciotomy where indicated. The insidious nature of the danger should be fully realized, and it is desirable that Emergency Room physicians be aware of the proper management of this serious hazard of the outdoors.



LIFESTYLE AND HEALTH

For centuries it has been the patient who has been the supplicant, asking the physician to heal wounds, restore energies, or even fend off death. Now, conversely, in the face of escalating health care costs, it may well be the time for the physician to enlist the help of his patients in order to balance our books.

To combat costs, we must seek new ways to teach people not to self-destruct. We must make people realize that no amount of money spent on research or therapy can curtail or eliminate self-induced ailments such as emphysema, cirrhosis of the liver, peptic ulcer, hypertension, and atherosclerosis.

While public health education is certainly not a panacea for reducing all health care costs or all disease, the extent of individual responsibility for health must be explored to the outermost limits. Behavioral modification experiments are rapidly expanding nationwide. Involvement by every physician to some degree is inevitable.

Personal involvement at this time in the Ocean State is especially pertinent. Blue Cross and Blue Shield of Rhode Island have taken an initiative to direct awareness of the public toward unhealthy lifestyles with a comprehensive program called "Change Your Mind About Your Body."

The Rhode Island Medical Society has endorsed the program enthusiastically. Doctor Herbert F. Hager, Society president, participated in the "Kickoff" last August, along

(Continued on Next Page)



with the state Department of Health, Governor Philip W. Noel, YMCA representatives, and the news media.

Our endorsement was not merely lip service. Hundreds of physicians from all over the state have requested thousands of booklets and posters from Blue Cross and Blue Shield. These printed aids will assist patients in recognizing the problems resulting from over-indulgence in alcohol, smoking, and drugs; the atrophy caused by lack of outdoor or indoor exercise; and the effects upon the body of the stresses which are characteristic of our hectic modern lifestyles.

Certainly, the preventive aspects of medicine are not new to our profession. We have been attempting for years in our practices to advise, cajole, and in some cases virtually bribe patients to "take care of themselves." We have too rarely felt the satisfaction of observing some of our patients improve their habits, avoid self-defeating lifestyles, and lead more productive lives. Rather, all too often, we have seen them ignore our warnings. In despair we have had to watch persons with emphysema slowly suffocate because their lungs have been destroyed by tobacco smoke and alcoholics deteriorate as their livers and brains have degenerated.

Perhaps with the help which has recently been forthcoming from segments of society outside of the medical profession we shall be able to spark renewed interest by influencing people to seek and attain a higher quality of physical life through sensible behavior.

Our profession, closest to the pivot on which health and illness balance, is to be commended for its active participation in this renaissance of preventive medicine. It is our hope that it will be a long-term commitment, not only because it may well result in an appreciable containment of health care costs, but also because it is in the humanistic tradition of our profession.

⚓ ⚓ ⚓

Guest Editorial

WE'VE COME A LONG WAY . . .

Comes now the new year, and once more the pessimistic and the faint-hearted among us are viewing with alarm the potential disasters that lurk in the wings as we play out our little act on (to use the grandfather of all cliches) "life's stage."

Along the Left Bank in Paris the bearded Existentialists in their raucous wine cellars are agreeing with Jean Paul Sartre that life is so awful one can do nothing better than learn to roll with the punch. In England the Angry Young Men mourn the decay of an empire and wonder loudly if golden ages are not gone for good. And along Columbus Avenue in San Francisco the unwashed "beatniks" recite their dirty poetry and clench fists at a civilization that doesn't seem to want to support them in dissolute idleness.

Everywhere you hear a wail — something about "a world I never made."

Let's pull down a history book and have a long look back at the road over which we have come:

100 YEARS AGO

At the beginning of 1859 preachers all over the South were still arguing that human slavery was part of God's plan. Irreconcilables were pushing the nation toward civil war and Senator Charles Sumner of Massachusetts was just retaking his seat after a five-year convalescence from a near fatal

(Continued on Next Page)

*Reprinted from the January 1, 1959 **Tulsa Tribune** with the kind permission of the publication and the author.



beating administered on the Senate floor by Senator Brooks of South Carolina.

Factory whistles in New England sounded at 6 o'clock every morning to call in the workers, many of them children under 10, for the 12-hour day. Dorothea Dix was busily touring alms houses and jails, trying to convince authorities that insane people weren't likely to find sanity while tied to stakes in the center of unheated, straw-strewn cells. At the Pennsylvania Penitentiary prisoners were rapidly going crazy under a new scheme of rehabilitation which caused them to be locked up in small cubicles for months on end so that they could "meditate."

Graveyards were still being filled with young victims strangled with whooping cough. The lower Mississippi Valley was a vast pest house of malaria and yellow fever. "Consumption" was everywhere, and six years would still elapse before Lord Joseph Lister, by crudely spraying carbolic acid around an operating room, would come to the conclusion that "laudable pus" was neither laudable nor necessary.

Many thousands of people were agreeing with David Thoreau, who held that what with the steam locomotive and the electric telegraph life had become so complicated and the pace so swift that the wise man must take to the wood and live in solitude.

500 YEARS AGO

At the dawn of the year 1459 all Christendom looked with fear upon a great enemy rising in the east — an enemy which had promised to overrun the whole of Europe. (Does this sound familiar?)

Five years before, the Turks had entered Constantinople in triumph, and now the swarthy raiders, bearing aloft the star and crescent of Mohammed, were slaughtering the Christian faithful and burning the churches throughout the Danube valley. Worst of all, the great merchant fleets of Venice and Genoa were rotting at their wharves because the trade route to the Levant was blocked, apparently forever.

Still, some men refused to despair and there was a little wild talk that perhaps Africa did not extend quite to the edge of the earth and that maybe one might reach the riches of the Indies by sailing around it. A Portuguese boy, Vasco da Gama, was to be born the next year who would prove this theory was right.

But there was other — even wilder — talk. For a few dared whisper that since the quartering and half-moons looked like a sphere, perhaps the earth itself was one. Then the Turkish pirates could be evaded by simply sailing west to India. Two years later, in Genoa, Christoforo Colombo was to be born.

Still, in spite of these brave and audacious dreams the world was a hard and bitter place. A madman, Henry VI, sat upon the uneasy throne of England. The War of the Roses was under way. Young peasants were recruited, older ones robbed, and the women raped as the armies of the contending lords swept back and forth over the bleeding land.

In France Joan of Arc had died 28 years before, but as the English threat had receded the menace of Burgundy had grown. It was the age of nobles, of seigneurs who owned serfs as they owned hunting dogs. It was also the age of witches. Gaping crowds crossed themselves against the evil eye as poor old crones died screaming in the faggots on market day. The weak and freightened Charles VII spent much time with astrologers as he sought the wisdom to rule, and many men and women fled to the monasteries and convents, convinced that worldly life was meaningless and retreat from man the only answer.

1000 YEARS AGO

The year 959 was greeted with some cheer by a Christian sect called the Chiliasts who had heard enough of the Bible to ponder upon the millennium. For some of them reasoned that it would be on the thousandth anniversary of Christ's birth that He would come again to rule the world for another thousand years, as promised in Revelation, before the final and triumphant Armaggeddon. That meant only 41 more years to wait for the Second Coming.

And it seemed that the Great Day couldn't come soon enough, for had the world ever been in a more evil and hopeless condition?

Here was the putrefying corpse of the once-great Roman Empire — the noble roads now overgrown, the bridges broken, the

walled cities fallen in. Disease lurked in the Holy City. The fever-ridden denizens of the Imperial Forum were grinding up precious marble statues to find lime to plaster their hovels, hovels built into walls that were once part of the palaces of the Caesars.

Only an apocalyptic miracle, it seemed, could save Christianity. The Moslem, Abdurrahman I, held the throne of Spain. All Britain above the Humber was in the hands of fierce Northmen, who treated their gods, Wodin and Thor, as though they were drinking companions. To the west was an endless ocean and to the east a frightening forest land filled with Magyars, Slavs, Huns, Werewolves, three-headed giants, and some men who hopped around on one huge foot.

Only in the monasteries, aloof upon the crags like Cassino or hidden in the seashore fogs like Lindisfarne, did a handful of monks try to fit together the bits and pieces of knowledge left after the death of Greece and the thunderous collapse of Rome.

Truly, it was a poor, poor time to be alive.

BACK TO 1959

And so we come back to 1959, to the world, as the complaining beatniks put it, "that they never made." And, sure enough, they didn't.

The cynics never rubbed King John's nose in the Magna Carta or established the British Common Law and the Rights of Man.

The hopeless didn't ferret out the secrets of disease, the laws of sanitation, and thus enable millions of children to bypass the graveyards.

The runners-and-hiders from reality have done nothing to relieve the famines, to temper the injustices, to ease the drudgery of mankind.

Yet, it's a wonderful world, and no thanks to the complainers.

Sure, we stand in the shadow of the H-bomb. Sure, we are approaching the day when one madman, conceivably, could press a button that would turn the earth into a scorched, dead moon. This is a problem that we must master, and we don't have lots of time.

But, compared to the horrors of the past, we live today, on almost all counts, in a golden age pregnant with an even greater promise for tomorrow.

If you would keep your spirits high and your perspective clear, pause often to look back along the road we've traveled.

We've come a long, long way.

JENKIN LLOYD JONES, *Editor and Publisher of The Tulsa Tribune in Oklahoma*

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Editor's Mailbox

UNITED WAY

To the Editor:

As you know, the United Way of Southeastern New England enjoyed an extremely successful campaign, topping its $8,518,000 goal by several thousand dollars. This could not have been accomplished without tremendous support by the community at large. Your publication's editorial of September, 1976, is a perfect example of the type of support we refer to. Thank you for your continued interest and commitment to the 123 agencies supported by the United Way of Southeastern New England.

Andrew M. Hunt
General Campaign Chairman



R.I.P.S.R.O.

To the Editor:

We recognize in your very fine editorial on health care costs (**RI Med J** 59:505-6, Nov 76) that there is an implication concerning the purpose of PSRO that should be clarified. The editorial states that "PSROs are very slowly coming on the scene. Their role and effectiveness in cost containment is yet to be proven." We believe that, while PSROs hopefully will have a positive impact on cost containment, the basic purpose of the PSRO and prime concern of physicians is the development of a health care review system that focuses on the quality aspect. While there are those who will judge PSRO based upon its effect on cost containment, it would be an erroneous conclusion that such purpose was the basic premise of the establishment of the PSRO Program across the country.

In the same editorial, the writer raises various questions concerning the effectiveness of PSRO's regarding laboratory and x-ray work. We certainly agree that the PSRO should apply its expertise to these very complex questions while, of course, the PSRO still looks to all third parties to continue their long-standing efforts to effect cost containment — perhaps more effectively than they have been in the past. All agencies in the health care community wish to curb the spiraling health care costs, but all agencies must be careful not to dilute or diminish the quality of those services as we attack the cost containment issue. This possible trade-off is indeed a very delicate issue.

Alton M. Paull, M.D.
President, RIPSRO



GENERIC DRUG LAW

To the Editor:

On June 2, 1976, Governor Philip W. Noel signed "An Act Relating to Dispensing Drugs and Labelling Prescription Products" after it was passed unanimously by the House of Representatives and the General Assembly. The Law became effective July 1, 1976. The intent of the Generic Drug Law is to provide for the creation of a Formulary Commission whose prime responsibility is to create and publish the **Rhode Island Formulary** by January 10, 1977. Subsequent to public hearings, the system is scheduled to become effective March 10, 1977.

For a number of valid reasons the Commission will not be able to meet the deadline of January 10. Therefore, a request has been made to Governor J. Joseph Garrahy to extend the implementation dates to April 10, 1977, and June 10, 1977, respectfully, via an Amendment to the present Law.

The current Commission members almost from their earliest meetings have recognized the great need for a physician to serve

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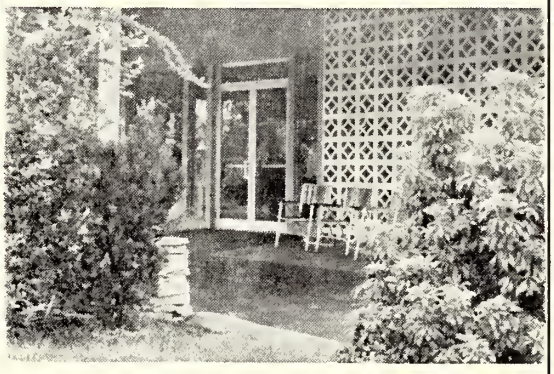
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on the Formulary Commission. Thus, the Commissioners voted unanimously to support a recommendation that the "Generic Law" be amended as soon as possible to include a physician. In the interim period, The Rhode Island Medical Society has been invited to send a representative to attend and participate in the weekly meetings.

The work of the Formulary Commission and the product of its efforts, the **Rhode Island Formulary,** will affect physicians, pharmacists and patients throughout the State. The concept, as a result of the Law, will probably be with us for a long time. For decades, physicians, pharmacists, and other health care professionals have worked closely together to establish the formulary system in this country. In 1962 the American Medical Association served as one of the four national professional organizations to approve of this patient care system.

The long and arduous task to provide an outstanding formulary for the citizens of this State is a responsibility of two dedicated professions — medicine and pharmacy! The consumers, and most importantly the Senior Citizens of Rhode Island, await our leadership and direction in this public mandate.

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Louis P. Jeffrey, Chairman
Rhode Island Formulary Commission

SOME NEW BUREAUCRATIC IMPERATIVES

When in doubt mumble. A mumble can never be quoted.

* * *

When a bureaucrat makes a mistake and continues it, it becomes policy.

* * *

Real bureaucratic leaders are always second in line, because they shove someone else out front to test the water. The one out front usually bears the title of special assistant.

* * *

Pomposity is the seat of bureaucratic power.

* * *

Nothing is impossible until it is sent to a committee.

* * *

Study a problem long enough and it may go away.

* * *

If you are going to be a phony, be sincere about it.

—James H. Boren, Ph.D., former Washington bureaucrat.

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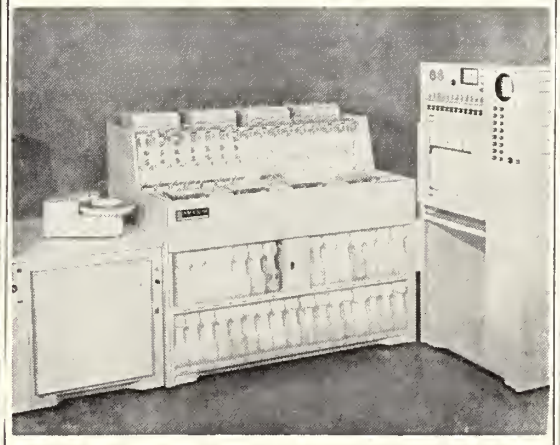
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HOSPITAL UTILIZATION

(Continued from Page 12)

Let us assume that in RI there were ten identical cases of ACUTE CHOLECYSTITIS, all successfully treated by CHOLECYSTECTOMY, all having three day work-ups, and all having total hospital stays of twelve days without inter-hospital transfers. Let us then assume that in the West there were also ten identical cases of ACUTE CHOLECYSTITIS successfully treated by CHOLECYSTECTOMY; that five had hospitalization as in RI; but that five were admitted to small hospitals, had three-day work-ups, were **transferred** on the third day to larger hospitals for operation the following day, and had recovery as the other cases. Regional hospital statistics would assume the character below (Table 6).

TABLE 6
HYPOTHETICAL HOSPITAL STATISTICS FOR RHODE ISLAND VERSUS WEST

Factor	Discharges	Days	ALOS	D/+
ACUTE CHOLECYSTITIS				
Rhode Island	10	120	12.0	1.0
West	15	120	8.0	1.5
Ratio RI/West	0.7	1.0	1.5	0.7
CHOLECYSTECTOMY				
Rhode Island	10	120	12.0	1.0
West	10	105	10.5	1.0
Ratio RI/West	1.0	1.1	1.1	1.0

All patients had in essence the same treatment, achieved the same results, and actually utilized hospital care to the same degree. However, the hospital statistics do not reflect this uniformity unless D/# is taken into account. As will be seen in the following section, West has a high proportion of 6-99 bed hospitals.

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EFFECTS OF HOSPITAL SIZE

That ALOS tends to increase with hospital size is demonstrated in Table 7. The tendency cuts across all age groups. Examination of the data for each region confirms the effect, and also reveals that there are significant differences between regions in the proportion of hospital days contributed annually by each size.

EFFECTS OF TEACHING STATUS

A publication of CPHA stated in June 1968.[11] "It is commonly believed that patients stay longer in teaching hospitals than in non-teaching hospitals. This is anticipated because of:

"1. teaching effect which slows delivery of care, and

"2. patient mix: teaching hospitals treat more complicated cases."

This and a companion study of February 1969[12] went on to demonstrate that there was indeed a "teaching effect" which prolonged stay despite correction for differences in patient mix and which was common to regions and to hospital size. Table 9 summarizes these data.

Deliveries are included, but newborns, patients in federally funded hospitals, stays of over 100 days, and discharges by death, transfer, or against advice are excluded.

RI figures are for one quarter of 1970,[43] and the remainder for one half of 1966. "The 'expected' average hospital stay is the **average** stay created by assuming that **each** patient is an **average** patient in his respective class. Each of the 3660 classes contains cases similar in complexity as defined by:

"a. Cause of hospitalization

"b. Presence or absence of complicating conditions

"c. Surgical vs. medical management

"d. Age"

Although a "teaching effect" of varying magnitude seems clearly demonstrated and regional differences in ALOS appear as in other tables, it is interesting and somewhat perplexing to note that differences in ALOS by hospital size do not appear.

More recent data from another perspective derive from AHA figures for 1973[5] (Table 10). The evidence is not direct and not entirely consistent from region to region, but

TABLE 7

ALOS BY AGE AND HOSPITAL SIZE
UNITED STATES, 1972 (4)
(Deliveries and Federal excluded)

Age/Size	6-99 beds	100-499 beds	500+ beds	Total
0-14	3.5	4.4	5.9	4.5
15-44	4.7	6.2	7.7	6.2
45-64	6.9	9.5	11.0	9.3
65+	10.4	12.7	13.7	12.2
Total	6.7	8.3	9.5	8.2

TABLE 8

% HOSPITAL DAYS BY SIZE AND REGION
1972 (4, 5)
(Deliveries and Federal excluded)

Region/Size	6-99 beds	100-499 bedr	500+ beds
Central	14.1	60.1	25.7
East	6.9	71.1	22.0
South	29.4	48.3	22.3
Rhode Island	1.2	61.9	36.9
West	20.4	67.2	12.4
United States	17.7	60.3	22.0

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TABLE 9
"TEACHING EFFECT" BY HOSPITAL SIZE AND REGION, 1966 (11, 12)

Factor	Expected	Actual	Difference as % expected	Range as % expected
United States				
Major teaching	8.0	8.7	+ 8.8	
Other teaching	7.6	7.5	— 0.1	
Non-teaching	7.3	6.8	— 6.8	15.6
Small (1-4999 dischg/yr)				
Teaching	6.8	7.6	+11.8	
Non-teaching	7.5	6.7	—10.7	22.5
Medium-Small (5000-9999 dischg/yr)				
Teaching	7.7	7.9	+ 2.6	
Non-teaching	7.2	6.5	— 9.7	12.3
Medium-Large (10000-14999 dischg/yr)				
Teaching Teaching	7.7	7.6	— 1.3	
Non-teaching	7.2	6.6	— 8.3	7.0
Large (15000* dischg/yr)				
Teaching	7.5	7.5	.....	
Non-teaching	7.3	6.7	— 8.2	8.2
Central				
Teaching	7.5	7.5	.....	
Non-teaching	7.2	6.9	— 4.2	4.2
East				
Teaching	7.4	8.8	+18.9	
Non-teaching	7.4	7.3	— 3.9	22.8
South				
Teaching	7.8	8.3	+ 6.4	
Non-teaching	7.2	6.3	—12.5	18.9
Rhode Island (1970, excl. PLIH) (13)				
Teaching	9.1	9.6	+ 5.5	
Non-teaching	8.0	7.3	— 8.8	14.3
West				
Teaching	7.9	6.7	—15.2	
Non-teaching	7.4	5.7	—23.0	7.8

a few generalizations seem warranted. The greater the concentration of trainees, the higher the ALOS. The larger the proportion of large hospitals, the more trainees. The greater the proportion of small hospitals, the fewer trainees and the shorter the ALOS. The exception to these observations seems to be provided once again by West.

DAYS LOST IN DISPOSITION

Well known to RI clinicians is the frustration evoked by delays in discharging patients occasioned by difficulties in obtaining a bed in a nursing or convalescent facility. A study conducted by the Hospital Association of RI (HARI) in 1973 is summarized in Table 11[14]. Data for two months of 1973 are projected for one year. These delays involved but 0.8 per cent of RI discharges, but accounted for 3.5 per cent of patient days expended, or 0.33 days per discharge of all ages.

The previously cited analysis of Medicare patients 1969-71[3] examined availability of and utilization of SNF beds by region and hypothesized significant decreases in ALOS if Central, East, and South were to replicate the experience of West in this respect. For the five disease entities studied a decrease in ALOS for the East was estimated as 2.1 days or 46.7 per cent of the actual difference. The ratio of SNF beds to population 65+ is reproduced in Table 12. The regional ratios are remarkably close except for West which diverges widely.

TABLE 12
RATIO OF SNF BEDS TO MEDICARE ENROLLEES U.S. 1969 AND RI 1972 (15)

	# beds	#/1000 65+
Central	79,807	14.0
East	81,524	15.8
South	82,951	14.3
RI (15)	1,678	15.5
West	96,989	32.2
U.S.	341,271	17.3

Let us assume that in West no days were lost in placement and that in RI such days involved only patients 65+. Then, if RI lost no days in placement, ALOS for 65+ would drop from 14.2 to 12.9. Since the ratios of SNF beds to population is approximately the same for East, Central, and South as for RI, it is reasonable to hypothesize that a similar drop in ALOS would be experienced if there were no days lost in placement of patients 65+ in those regions. Table 13 projects such changes in representative utilization data by region. If the hypothesis were met, it is suggested that there would be from 3.1 per cent to 4.0 per cent fewer d/1000 (other than in West) under 1972 conditions.

It must be stressed that the hypothesis rests upon uncertain foundations inasmuch as the RI data were subjective in nature and omitted two major hospitals and consisted of but a two month sample, since there is no firm evidence that the ratio SNF beds to population 65+ relates directly to ALOS, and since it is not established that West experienced no delays in placement. However, this exercise strongly indicates that further study along these lines might be helpful.

EFFECTS OF SOCIO-ECONOMIC STATUS

A demographic variable has been identified in RI[16] which affects the elements of the utilization equation. A "high" socio-economic status (SES) is associated with low D/1000, ALOS, and d/1000 in comparison to a "poverty" SES. "Middle" and "low" SES show gradations between the extremes. RI patients discharged from local short-stay general hospitals (other than Women and Infants Hospital, of Providence, RI) in 1973 were classed by age, diagnosis group, SES and utilization elements compared. SES was determined for groups of patients by certain characteristics of the census tract of origin such as median family income, housing availability, and other factors. The adapted Table 14 contrasts "high" and "poverty" SES groups. D/1000, ALOS, and hence d/1000 are consistently lower for "high" SES with the single partial exception of the age group 65+.

Similar findings by city were observed in a 1974 study of the lower Blackstone Valley[8] and were correlated with additional differences between SES such as "inappropriate" emergency room (ER) visits, health profiles, operation rates, and volumes of ambulatory visits. In RI SES seems to be an important variable in utilization statistics.

SUPPLY OF AND DEMAND FOR HOSPITAL BEDS

It is not unreasonable to assume that higher occupancy should be related to or occasioned by a longer ALOS, as the data in Table 15 would suggest. Occupancy does trend with ALOS, but inconsistently. West

TABLE 10
UTILIZATION DATA BY REGION, HOSPITAL SIZE,
AND DENSITY OF MEDICAL-DENTAL TRAINEES, 1973
(Deliveries included, Federal excluded)

Factor/Region	U.S.	Central	East	South	Rhode Island	West
6- 99 beds						
% days	14.8	14.4	5.9	19.9	1.2	21.0
Trainees/1000 occ. beds	4.6	1.1	17.1	8.2	.....	1.2
ALOS	6.7	7.5	7.8	6.5	7.7*	5.9
100-499 beds						
% days	62.8	61.2	65.7	59.8	63.0	67.9
Trainees/1000 occ. beds	52.1	38.9	77.4	35.9	61.7	60.2
ALOS	7.7	8.1	8.5	7.2	8.0	6.6
500+ beds						
% days	22.3	24.4	28.4	20.3	35.9	11.1
Trainees/1000 occ. beds	200.2	185.4	235.2	155.5	214.7	276.9
ALOS	9.3	9.3	11.0	8.5	9.6	7.4
Total						
Trainees/1000 occ. beds	78.1	69.3	98.8	54.7	115.9	71.9
ALOS	7.8	8.2	9.0	7.3	8.5	6.5

*One hospital no deliveries or patients under 14 yrs.

TABLE 11
DAYS CONSUMED IN DISPOSITION
(From ready state to placement)
RI, projected for 1973*

Factor	# pts. (2 mos)	Average days to placement (from referral)	(from ready)	Days (projected 1 yr)
To SNF	442	9.7	4.9	12995
To ICF I	62	10.2	5.3	1972
To ICF II	65	8.1	4.0	1560
To Medical Center	165	11.4	8.4	8316
To Zambarano	45	37.2	29.0	7830
Total	779	11.6	7.0	32673

*Excluding Miriam and Women and Infants Hospitals

TABLE 13
UTILIZATION DATA, ADJJUSTED
AGE GROUP 65+, 1972

Factor	U.S.	Central	East	South	RI	West
ALOS, unadjusted	12.2	12.5	14.8	11.2	14.2	10.0
ALOS, adjusted	11.1	11.2	13.5	10.0	12.9	10.0
d/1000, all, unadjusted	1134.5	1255.9	1249.8	1103.0	977.3	834.3
d/1000, all, adjusted	1099.1	1211.9	1210.6	1058.7	943.0	834.3
% change, d/1000	—3.1	—3.5	—3.1	—4.0	—3.5	.....

TABLE 14
UTILIZATION DATA BY AGE AND SOCIOECONOMIC STATUS RI, 1973
(Deliveries and PLIH excluded)

		0-14	15-44	45-64	65+	Total
D/1000:	High	68.9	66.7	129.4	281.0	100.7
	Poverty	137.2	109.9	136.6	235.7	142.7
ALOS:	High	4.2	6.3	10.0	13.7	8.8
	Poverty	5.4	7.1	12.0	14.9	9.8
d/1000	High	289.4	420.3	1294.0	3849.7	886.2
	Poverty	740.9	780.3	1638.0	3511.9	1396.5

does have the lowest occupancy and the shortest ALOS. East has the highest occupancy and the longest ALOS. However, Central and South have similar occupancy, but divergent ALOS. The trend in ALOS from region to region can more consistently be related in an inverse manner to the proportion of days provided by small hospitals.

A chronologic view of RI experience may add another perspective toward resolving these apparent discrepancies. In Table 16 and Graph 5 occupancy rate, number of patients, and ALOS are compared over several years in the category adult medical-surgical admissions, that type of bed most in demand.[17] From the 1969-70 base there is until 1975 a steady increase in occupancy, accompanied by a progressive but fluctuating increase of patients (i.e., demand) and a progressive but fluctuating reciprocal decrease in ALOS. In 1975 occupancy abruptly drops, but the trends in number of patients and ALOS continue. It would appear that occupancy is an outcome rather than a determinant. It is suggested that the consistent factor is number of patients; a greater demand for beds leading to earlier discharge of professionally selected patients, and thus to a decrease in ALOS. Occupancy is then secondarily determined by the interaction of the two primary factors.

In 1975, however, one must consider the possibility of effects from the beginnings of an intensive utilization review system.

INTENSIVE UTILIZATION REVIEW

In conversations upon the subject of ALOS one frequently postulated reason for West's short stays is a high enrollment in one or another group health plan having the features of a health maintenance organization (HMO) and thereby embodying intensive utilization review. On the basis of at least one controlled study[18] such a premise seems unwarranted. Two groups of federal employees in metropolitan Washington, DC alike in composition as to age, sex, family size, and income were compared. One group obtained medical care in the traditional manner, the other through an HMO. ALOS was essentially the same for both groups, but the discharge rate for the HMO enrollees was about half that of the other group. If this experience is typical, then from the premise above one would expect West's D/1000 to be comparatively low and its ALOS to approximate the national average. The exact reverse is true.

One may reasonably argue that the two groups in the study were not truly comparable in that attitudinally one voluntarily chose one form of delivery of medical care over the other and might, therefore, have had basically different medical needs and health habits. Further study and analysis of utilization patterns is necessary before firm conclusions can be drawn.

In respect to effects of an intensive utilization review system on ALOS a before and after study was reported in the press in 1974.[19] The Commonwealth Hospital Audit Medical Program (CHAMP) system was established in Massachusetts in 1973 to monitor Title XIX (Medicaid) patients. ALOS for theoretically controlled diagnosis groups was compared before and after institution of the system. A 6 per cent decrease in ALOS was noted and attributed to the effects of the review system. No note was made, however, about any effects upon D/1000 or d/1000.

MEASURES OF COST AND MEASURES OF UTILIZATION

Annual hospital costs may be measured in many ways. Commonly used are $/bed, $/patient day, $/discharge, and $ per capita population. These numbers have frequently been used indiscriminately in the past for comparative purposes. It seems both logical and desirable at this time to attempt to relate them realistically to the utilization elements discussed heretofore. For this purpose we draw entirely upon the AHA data for fiscal 1973 previously cited.[5] Table 17 shows regional figures.

At first glance there seems no obvious interrelationship. It seems reasonable to assume that there are regional differences due to cost of living and that $/bed could serve as an index. Based upon that assumption the following relationships to utilization factors are derived (Graph 7). $ per capita parallels d/1000. Where there is divergence it will be seen that the direction of the divergence is determined by occupancy rates. Where occupancy is high $ per capita falls below d/1000, where low the reverse is true (Graph 8). $/d varies inversely with ALOS, the shorter the

TABLE 15
UTILIZATION DATA, 1973, BY REGION
(Deliveries included)

	U.S.	Central	East	South	RI	West
ALOS	7.8	8.2	9.0	7.3	8.5	6.5
Occupancy, %	75.6	75.9	80.3	75.4	82.7	71.0
% days, 6-99 beds	14.8	14.4	5.9	19.9	1.2	21.0

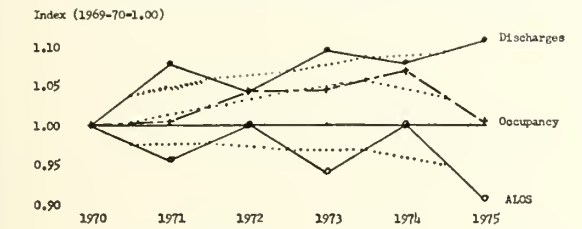
TABLE 16
UTILIZATION DATA, RI, 1969-75
ADULT MEDICAL-SURGICAL

	1969	1970	1971	1972	1973	1974	1975
Discharges, #	80141	83968	88972	85061	89656	88219	90685
Occupancy, %	89.3	89.7	90.1	93.1	93.1	95.4	90.0
ALOS	10.6	10.3	9.8	10.4	10.0	10.5	9.5

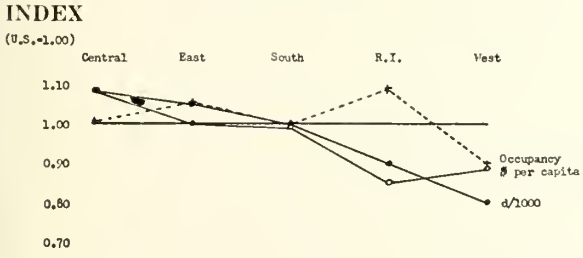
TABLE 17
MEASURES OF HOSPITAL COSTS
FISCAL YEAR 1973

	Central	East	South	RI	West	U.S.
$/ bed	29314	38520	25441	41593	35322	31601
Occupancy, %	75.9	80.3	75.4	82.7	71.0	75.6
$ per capita	140	169	111	154	137	139
$/ d	106	131	92	138	142	114
$/ D	872	1188	675	1175	925	896
% days, 6-99 beds	14.4	5.9	19.9	1.2	21.0	14.8
ALOS	8.2	9.0	7.3	8.5	6.5	7.8

Graph 6
Utilization Indexes, 1970-75
Adult Medical-Surgical Patients, Rhode Island

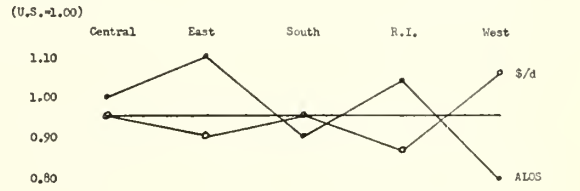


Graph 7
Utilization Data (Deliveries Included)
versus Measures of Cost
Fiscal Year 1973



(Continued on page 40)

Graph 8
Utilization Data (Deliveries Included)
versus Measures of Cost
Fiscal 1973



CECILE IBRAHIM, M.D.

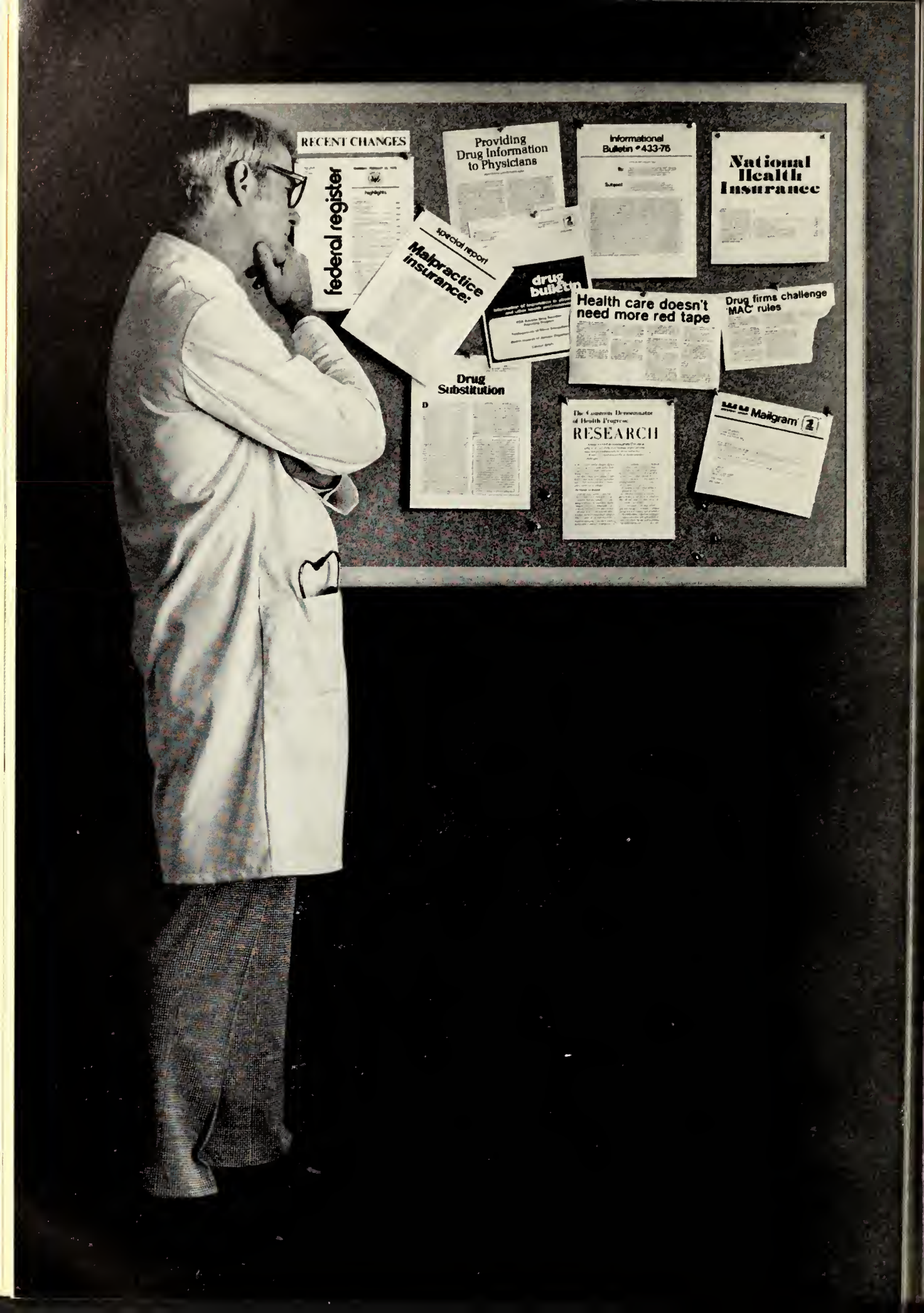
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THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all nds of scrutiny. Your control over patient therapy is ing monitored, judged and occasionally abrogated, metimes by unknown third parties.

The worry is that in the wake of this focus, the rela- nship between you and your patient will be weakened, thout offsetting benefits. Consider three examples:

Drug substitution In most states, pharmacy laws, gulations or professional custom stipulate that your n-generic prescriptions be filled with the precise prod- s you prescribe. But in the last five years, a dozen or re State laws have been changed, permitting the phar- cist in most cases to select a product of the same neric drug to fill any prescription.

Ironically, this dilution of physician control has en place against a background of growing evidence t purportedly equivalent drug products may be in- ivalent, since neither present drug standards nor their rcement are optimal. In fact, the FDA itself says it not enforced the same standards for hundreds of "low-on" products that it had applied to the original A approvals. Thus physician control over patient apy is being eroded with a risk that patients may be osed to drugs of uncertain quality.

The major advertised claim for substitution is reduced scription prices for consumers. Yet no documentation ny significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is deral regulation designed to cut the Government's bill by setting price ceilings for drugs dispensed to dicare and Medicaid patients. Unless the prescriber fies on the prescription that a particular product is dically necessary, the Government intends to pay only he cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

It could make a difference in your practice tomorrow.

P·M·A
Pharmaceutical Manufacturers Association
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stay the higher the cost per day (Graph 9). $/D varies inversely with D/1000, the more discharges the lower the cost per discharge.

While it is true that $/D does vary directly with ALOS (with modifications by occupancy rate), it is clear that **true cost** does relate directly to **d/1000 only.**

PATIENT MIX

Implicit in the preceding sections have been two assumptions. First, statistical adjustment can be made for regional differences in demographic characteristics of the population and in variations in hospital factors. Second, patient mix is comparable between regions, i.e. there are similar incidences of disease entities. If the latter premise is valid, comparison of adjusted utilization data between regions is a matter of comparing apples to apples. If it is not, comparisons have little meaning.

Apparently little attention has been paid to this fundamental question. ALOS has been examined in its minutest variations, but incidence of disease entity (principal cause of admission) related to population by region does not seem to have been exposed to close study. CPHA in its various Length of Stay Studies[11–13, 20] does imply a need to compare only "matching" patients. Differences in incidence of disease and operation groups have been noted in RI by age and SES.[16]

An indirect approach to this question follows, and its application indicates in a rough way that there may indeed by real differences in patient mix between West and the other areas. A set of 19 representative diagnoses* was adapted to PAS terminology[20] from the previously cited Medicare paper[3] (p. 11). On the assumption that PAS hospitals were representative of their respective regions and that they treated representative patients, one can project the percentage of discharges by region for the diagnosis set for the age group 65+. Recalling that D/1000 varies by region and is affected by D/#, the tabulation shown in Table 18 can be evolved. The percentage of discharges represented by the diagnosis set is quite constant from region to region. When D/1000 and D/1000i are derived, however, differences in West become evident not only for the set alone, but also for the set in relation to D/1000 and D/1000i for the age group overall (Graph 10). These observations suggest the possibility that there may be a significant difference in the patient mix of the West.

More clear cut evidence of such difference derives from another aspect of the same CPHA data. Surgical procedures are listed by region in frequency ranking. Several operation groups seem to have an inordinately low frequency for West. Seventeen such procedures make up the set for all ages* Per cent discharges, D/1000 for the set, and estimated effect upon d/1000 overall are considered (Table 19). If other regions were to have West's incidence of the procedure set, decreases in the resulting d/1000 would range from 1.2 per cent to 3.3 per cent. Examination of the composition of the set suggests that differences may be more than fortuitous. Most procedures are those which would be expected to be common to the "surgicenter" approach to ambulatory surgery. West in 1972 was the home of the "surgicenter". Such patients, whether at free-standing or hospital associated facilities, would not be regarded as hospital in-patients and therefore would not appear in hospital utilization statistics. The observations immediately above, then, may represent differences of practice rather than differences of incidence.

QUALITY OF CARE

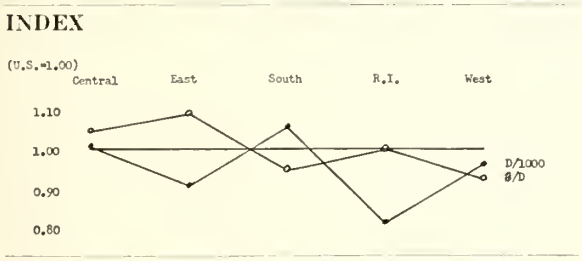
The observant reader who has persevered to this point will surely have noted that this paper has been couched solely in the terms of utilization review and of cost containment, except for one initial assumption about qual-

*Cataract, acute myocardial infarction, hemorrhoids, acute upper respiratory infection, pneumonia, inguinal hernia, other hernia of abdominal wall, cholelithiasis and cholecystitis, fracture of humerus, fracture of femur, malignant neoplasm of stomach, malignant neoplasm of rectum, malignant neoplasm of breast, malignant neoplasm of prostate, malignant neoplasm of bladder, diabetes mellitus, hypertension, cerebrovascular disease, and emphysema.

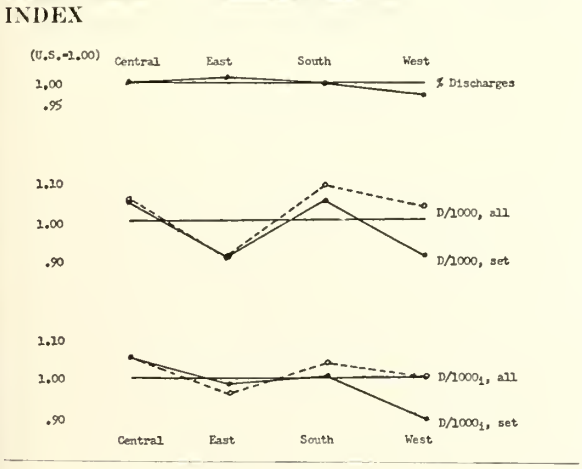
*Cystoscopy and urethroscopy; dental extraction; kidney dialysis and extracorporeal circulation; other operative radiography except arteriography and venography; excision of cervix; incision, excision of pilonidal cyst; repair of umbilical hernia;incision, excision of lesion of vulva and perineum; incision, excision of rectal and perirectal tissue; ureteral catheterization; myomectomy, hysterotomy, excision of lesion, biopsy of uterus; excision of ovarian lesion; other lymph node and lymphatic structure; meatotomy; urethral; other fallopian tube; incision, excision lymph node; and interruption of vas deferens.

ity of care.[1] The many practitioners familiar with one or more of the many methods of medical audit will have remarked that but one of the many outcome parameters familiar to them has been cited. The proper and traditional goal of the medical and allied health professions has been, is, and should be to return the sick, injured, or parturient patient as rapidly and as fully as possible to his normal functional place in society. Despite our critics this goal is not only idealistic but realistic and most importantly factual. This goal must be our primary concern. We must, however, recognize that resources may be limited for these purposes and consider seriously the cost containment arguments presented. Our function must be twofold. We must examine concepts in the true critical sense. We must also objectively assess the quality of care rendered in such a manner that we can answer to ourselves and to the public certain minimum questions which are fundamental to the welfare of our patients.

Graph 9
Utilization Data (Deliveries Included)
versus Measures of Cost
Fiscal Year 1973



Graph 10
Regional Incidence of Diagnosis Set
Age Group 65+, 1972



Can overweening regulatory preoccupation and pressures related to utilization factors redound to a deterioration of the quality of care?

Could a high readmission/transfer rate (D/#) in association with a short ALOS represent incomplete treatment necessitating further hospitalization?

Has possible overmanipulation of the delivery of medical services and ALOS (through the review mechanism, HOM's, and "surgicenters") already led to a dehumanization of care and thence to patient dissatisfaction and a spate of malpractice problems?

These questions are not idle but logical and reasonable. Yet there are no firm, direct answers. There is to date no way to quantify quality care for comparative purposes.

(Continued on Next Page)

TABLE 18
REGIONAL INCIDENCE OF DIAGNOSIS SET
AGE GROUP 65+, 1972

	U.S.	Central	East	South	West
% discharges	32.5	32.6	33.2	32.2	31.5
D/1000, set	108.2	114.1	99.3	114.3	98.6
D/1000i, set	78.4	82.7	77.0	79.4	69.4

TABLE 19
REGIONAL INCIDENCE OF PROCEDURE SET
ALL AGES, PAS, 1972

	U.S.	Central	East	South	West
% discharges	4.8	4.4	6.4	4.3	3.1
D/1000, set	6.6	6.6	8.3	6.2	3.8
D/1000, all	138.9	149.1	130.5	143.2	125.1
D/1000, all (adjusted)	136.6	147.8	126.2	141.5	125.1
d/1000, all	1134.5	1255.9	1249.8	1103.0	834.2
d/1000, all (adjusted)	1115.6	1238.3	1209.1	1089.2	834.2
% change, d/1000	—1.7	—1.4	—3.3	—1.2	.....

Hospital mortality is a more solid entity and is available nationally for PAS hospitals.[22] The accurate use of such data, however, would demand the consideration of at least two additional factors: the regional disease or operation specific D # and similarly specific death rates for patients transferred to lesser levels of care in immediate association with hospitalization. For example, if a region with short ALOS were habitually to discharge its terminal patients early to die in SNF's, its hospital mortality and ALOS would appear less than a region with a longer ALOS which did not habitually "unload" such patients. The merits or demerits of such practices are obviously beyond the scope of this study, but the statistical implications must be noted.

The importance of objective, reproducible, uniform methods of measuring quality of care become increasingly important against the backdrop of today's endless bureaucratic attempts to tinker with methods of delivery of medical care. These attempts, almost without exception, are designed to manipulate utilization factors and make the unsupported assumption that quality of care will not be affected.

Clinicians must recognize that we, as a group, are the sole guardian of the patient, the only arbiter of the sick patient's rights, and the lone monitor of the effects of tampering with the methods of delivering his care. We must establish parameters of outcome related to quality which afford means of comparison in order to protect our patients from harm. We **cannot** assume in any given set of circumstances that quality of care is maintained or improved; we must **continually prove** it.

COMMENTARY ON DATA

Many data sources have been drawn upon, both state and national. All exclude or make it possible to exclude newborns and patients in federally funded institutions such as military and Veterans Administration hospitals. Beyond that point, however, time periods, methodology, exclusions and exceptions make the data anything but uniform. Wherever possible comparisons have employed figures for similar time periods gathered and expressed in similar ways. In order to evaluate the quality of the data and to assess the validity of conclusions, it seems appropriate to comment briefly upon the principal sources.

RI information on the whole has been uniformly gathered, permits separation of deliveries, involves all patients, and is available both for calendar and fiscal years. Each hospital has provided PAS data to the using agencies SEARCH, Health Planning Council, HARI, and the RI Department of Health.

The characteristics of national utilization statistics, on the other hand, vary widely. CPHA data usually exclude deaths, transfers, discharges against advice, and stays over 100 days, altogether about 5 per cent of all discharges. Nationally for 1972, 17.0 per cent of hospitals participated with 33.0 per cent of beds, but regionally hospital participation varied from 14.0 per cent in South to 29.9 per cent Central, representing from 23.0 per cent of beds in the South to 43.4 per cent Central. CPHA figures have no readily identified population bases and **hence cannot address D/1000 or d/1000.**

Medicare data include a 20 per cent randomized sample of all enrollees gathered from billing sources (rather than from patient records). AHA figures relate to all patients by fiscal year including deliveries. DHEW (Health Resource Administration) statistics are gathered manually from a sampling of discharges from a sampling of hospitals selected by a statistically controlled method of probabilities. These include but identify deliveries. Hospital size is recorded as well as age and race by region.

DISCUSSION

Initially four references dealing with hospital utilization were cited. A synthesis of those observations would be that: 1. Increasing costs of medical care have as their main components those attributable to hospitalization, 2. Hospital costs vary with ALOS, 3. There are regional differences in ALOS, 4. It is assumed that there are no significant differences in quality of hospital care between regions, 5. It is assumed that there are no significant differences in patient mix between regions, 6. Cost can be ameliorated by reducing ALOS without affecting quality of care, 7. ALOS in RI can be reduced by regulatory means as much as 24 per cent, and

(Continued on Page 47)

What's New

Lederle announces a new formulation for triamcinolone acetonide. Quarter Strength Aristocort A Cream with Aquatain™ is recommended for treating large skin areas and for use with occlusive dressings. Lower potency makes it suitable for starter therapy.

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Riker Laboratories has introduced 250 mg Theolair (theophylline) Tablets. This is an increased strength of the single-entity bronchodilator originally marketed early this year by Riker.

* * *

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Doubleday announces a second printing of Frank G. Slaughter's "Plague Ship." The recent mysterious American Legion epidemic in Philadelphia presents the same dilemma as is outlined in the book.

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Pinecliff Publishing has a group of Patient Information Booklets designed to tell patients what they should know about their illness. The booklets average 32 pages and cover such subjects as Cataracts, Gall Bladder Disease, Breast Lump, Prostate Trouble and Back Trouble. Books are edited by Morton K. Rubinstein, M.D., of UCLA Medical Center, Los Angeles. Samples are available.

* * *

Burroughs Wellcome has eliminated the dosage of Actifed-0® Expectorant for infants under two years of age. Use of the preparation in infants under two years has been found to be inadvisable because of the possibility of overdosage of codeine.

* * *

The Ames Company has developed a new system, the "Tek-Chek® Synthetic Control Set for Dextrostix." It is designed to control the quality of results when testing for quantity of glucose in whole blood by the use of Dextrostix.

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Parke-Davis is introducing a disposable surgical prep razor. Features a Schick Super Chromium blade and comes with a protective cover.

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Parker Publishing has a new reference book titled "Medical Word Finder." Written by George Willefort, M.D., it is the second edition and has been completely updated. Recommended for medical secretaries. Includes a phonetic word list for those who don't know the spelling enough to locate the word. 490 pages, $12.95.

* * *

The Ames Company has issued a catalog to describe the comprehensive range of thyroid-testing products and services the company now has available. The "Ames Thyro System" catalog may be obtained free of charge by writing Miles Laboratories at Elkhart 46514.

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The 3M Company announces three sizes of its Micropad brand Surgical Dressings. The sizes are 3 x 2, 3 x 4, and 3 x 8 inches. The 3 x 4 replaces the old 4 x 4. New packaging is see-through polyethylene. The Micropad dressing surface minimizes adherence.

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Dell Publishing has released "Toddlers and Parents: A Declaration of Independence." Written by T. Berry Brazelton, M.D., previously the author of "Infants and Mothers," the new book is advice on the proper upbringing as applied to the young child — ages one through three being the last and only years in which parents can play a role in their child's development. $5.95.

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The Elkhart Traveler Corporation, manufacturer of travel trailers and mini-motor homes has recently constructed a custom-built, 39-foot trailer containing x-ray equipment, which is to be used in conjunction with a companion trailer with facilities for EKG, hearing and lung testing, eye examination and laboratory studies. Mediscreen will use the trailers to provide mobile screening type medical examinations to industrial communities.

News of what is new in the medical supply industry is composed of abstracts from news releases by manufacturers — of pharmaceuticals, clinical laboratory supplies, instruments, and surgical appliances — and book publishers. Each item is published as news and does not necessarily constitute an endorsement of a product or recommendation for its use by **The Rhode Island Medical Journal** or the Rhode Island **State Medical Association.**

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HOSPITAL UTILIZATION

(Continued from Page 42)

8. "Longitudinal tables" of utilization data can "evaluate the effectiveness of the PSRO program."

Census region West has been compared to both East and RI in proof of these assertions. To the unknowledgeable a plausible case has been made. Critical examination, however, reveals the synthesis and its parts to be flawed.

While it is true that adjusted costs per discharge vary with ALOS, it also must be observed that the first factor is not a proper measure of true costs. While it is true that there are regional differences in ALOS, it is also true that there are reciprocal differences regionally in D/1000, and that the best measure of utilization is d/1000. While it is true that regional differences in quality of care cannot be demonstrated, it is also true that it cannot be proven that such differences do not exist. Also, there may be real regional differences in patient mix.

While there is no firm evidence that regulatory reduction of ALOS will ultimately and inevitably lead to sacrifice of quality of care, there is at least tentative evidence in terms of readmission/transfer rates and malpractis problems that quality of care may already have suffered from overzealous emphasis upon utilization factors.

The goal of reducing RI ALOS and costs by 24 per cent as implied in the press report[2] is flagrantly unrealistic. This state, by whatever standard, ranks next to West (the "ideal") in d/1000 and indeed outranks West in $ per capita (adjusted to hospital "cost of living").

While the use of longitudinal tables, comparing an entity to itself over time, may seem to obviate the need for statistical adjustment to take into account the many variables entailed in regional comparisons, this is not entirely the case. Reflection confirmed by experience in RI, suggests that many of the variables are in a constant state of flux within a region and therefore will still require adjustments for accurate comparisons over time.

Although the synthesis referred to may be flawed, this is but a negative observation if it is the only finding of this study. There are real utilization problems, and we as clinicians cannot afford to ignore them simply because the habitual clique and claque of critics of the profession have looked at them from an unknowledgeable perspective. Additional comments do seem to be warranted by the material presented.

First, there is an obvious need for some objective, reproducible, widely applicable means of measuring quality of care. If we believe care rendered is of high quality, we must be able to prove it. If some areas of care are not excellent, we must be able to identify and correct them. If we believe the best way to lower costs is to improve care, we must be able to prove it. If we believe bureaucratic tinkering with the delivery system is deleterious, we must be able to prove it.

Second, considerably more and better data are needed in regard to important utilization variables such as D #, SES, teaching effect, days lost in placement, and patient mix among others. These variables must be related not only to utilization but also to quality.

Third, the major utilization variables which we have identified are generally not susceptible to regulatory manipulation, i.e. age, fertility, SES, hospital size, teaching status, patient mix, and D/#. To be sure regulatory limits have been placed on construction of new hospital beds (sustaining a high demand), new SNF units have appeared, intensive utilization review is being instituted, and "surgicenters" and "HMO's" are being encouraged. However, it is also true, coincidentally or otherwise, that the malpractice situation in RI has been considerably aggravated concurrently and that costs are still rising.

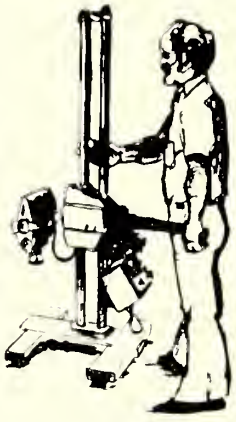
Fourth, while there may be "unnecessary" hospital days, there probably are no more proportionately in RI than there are in Census Region West. While it may be true that meticulous attention to utilization may reduce ALOS by about 6 per cent, it must be remembered that there must be a point beyond which such pressures redound to the harm of the patient.

(Continued on Page 51)

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Fifth, it must be stressed that the focus of all but one of the studies cited has been the hospital patient, accounting for but a fraction of total utilization and total cost. The patient in the hospital must be tied to the patient at other levels of care if a realistic picture is to be developed. As suggested, deaths at other levels of care related to hospitalization need to be identified, as well as readmissions.

Sixth, few if any clinicians appear among the authors of such studies. This absence may be understandable but it is also lamentable if one accepts the related imputation that misinterpretations and incomplete analyses might have been averted by the review of such studies by an interested clinician. Clinicians with interest and talent in statistical analyses must become involved, since such studies form the basis of much of the health planning in this state and in the U.S. Faulty planning promises great harm and measureless waste of resources.

There is finally, then, a most important need for clinician organizations who will assess quality, who will have access to uniform data, who will be able to follow the patient through the various levels of care, and who will authoritatively produce pertinent objective analyses. Such organizations should be able to maintain an even keel in the mandated planning process both locally and nationally.

ACKNOWLEDGEMENT

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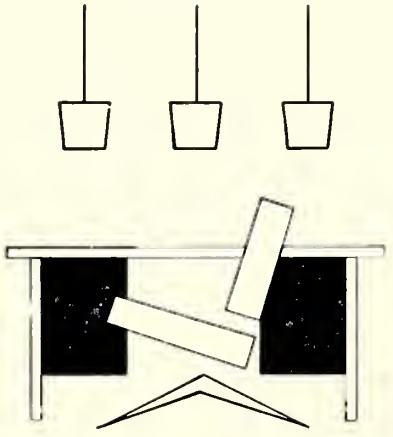
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SNAKEBITE

(Continued from Page 15)

must be adequate for complete debridement and release of tension in the compartment.[4, 5] Finally, the surgeon must know that demarcation will not occur in snakebite as long as active venom is in the tissues. If a hand or foot has obviously been destroyed, amputation should not be delayed in anticipation of demarcation. Anesthesia should be by local infiltration in most cases or by spinal or brachial block. General inhalation anesthesia should not be given in the early hours after a snakebite. Rapid acting barbiturates may be given to prevent "caine" convulsions taking precautions not to depress respiration. Debridement of a subfascial envenomation should be by blunt curettage, using the abortion-type of suction equipment. The wound should be adequate to expose bleeders and control them with care not to injure important arteries or nerves. The extremity is not elevated. Ice-packs with fresh-water ice may be placed against the wound to relieve pain and reduce bleeding, but not while antivenin is being administered. The bandage should be loose and adequate to absorb drainage The patient should be reassured, but never be optimistic about a snakebite on the first day. Never underestimate the destructive potential of the venom of a small snake.

HOSPITAL

Every case of snakebite should be admitted to a hospital for observation, care, and accurate, complete, and legible records. These are of great benefit in the court-room. The surgeon should have telephone consultation with an expert in the field and should share the responsibility with local colleagues to establish the principle that no better care was available at the time and place.

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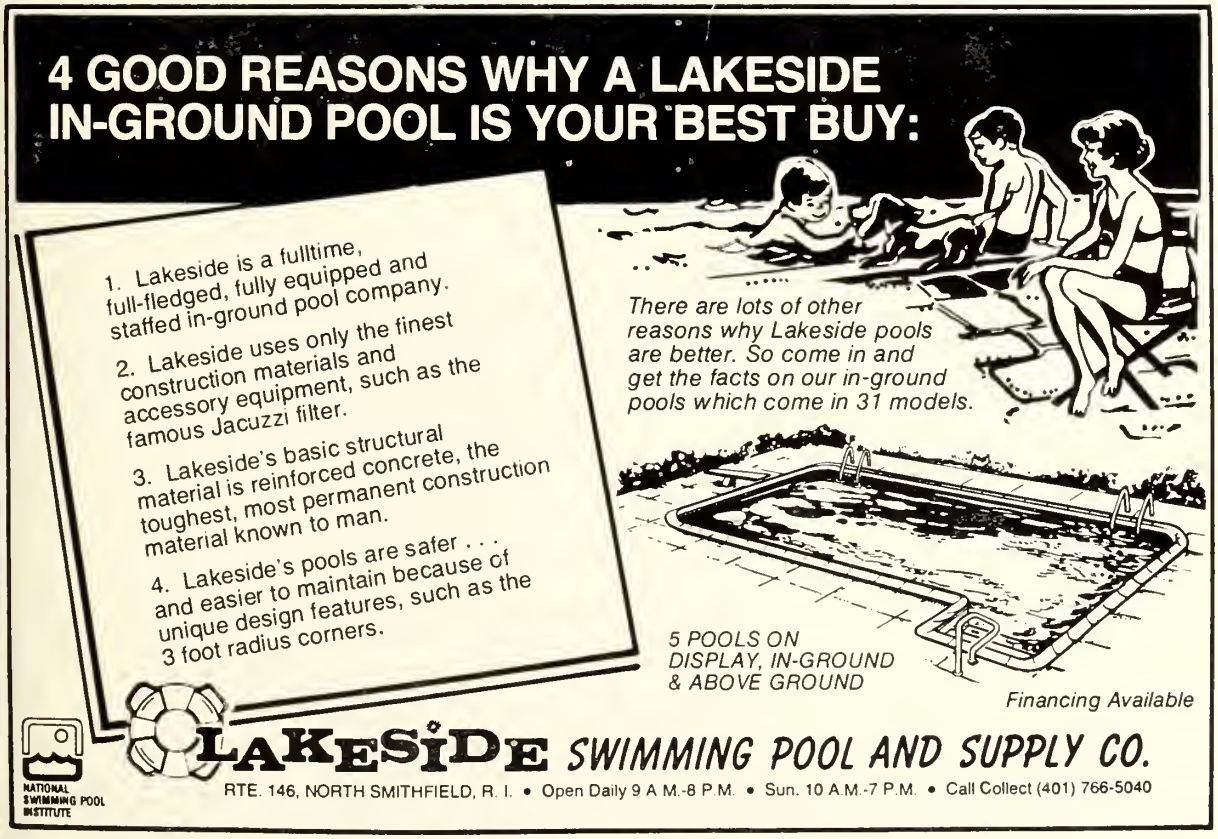
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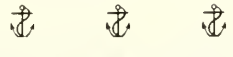
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THEOPHYLLINE DERIVATIVES

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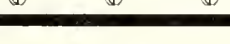
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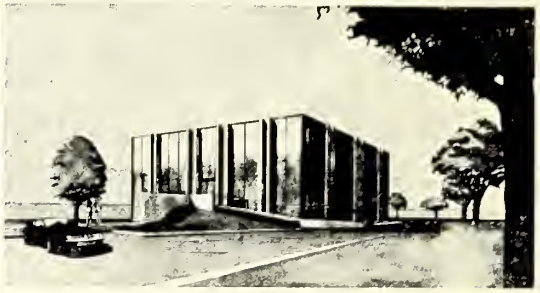
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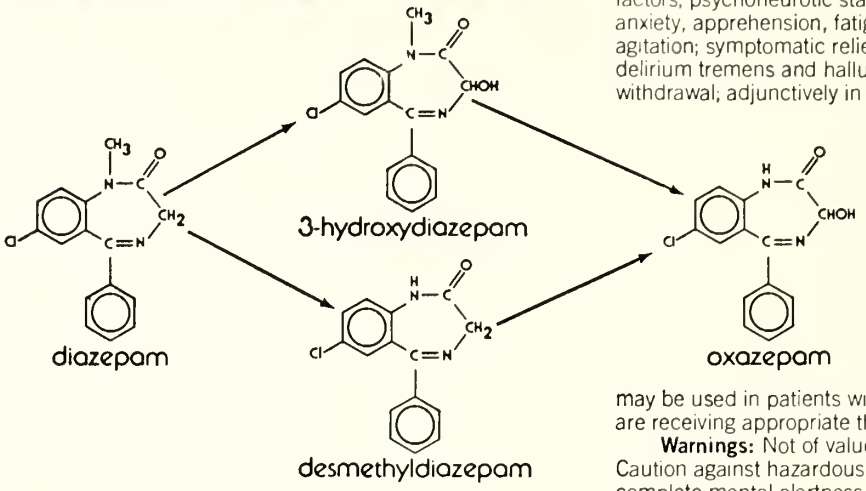
February, 1977

Vol. 60, No. 2

CHINESE MEDICINE

See Pages 83, 93

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Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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CONTINUING MEDICAL EDUCATION CALENDAR

MARCH

9 "GENETIC DISORDERS," Siegfried Pueschel, M.D., Director, Child Development Center, Rhode Island Hospital. Basic Science Lecture Series, 1:00 P.M., 7th Floor Conference Room, Rhode Island Hospital A.P.C. Building.

9 BIOLOGICAL AND MEDICAL IMPLICATIONS OF NUCLEAR POWER. Topics and speakers will include "Biological Implications of Radiation," Victor P. Bond, M.D., Associate Director for Life Sciences, Brookhaven National Laboratories; "Epidemiological Studies of Irradiated Populations," Robert W. Miller, M.D., Chief, Clinical Epidemiology Branch, National Cancer Institute; "Environmental Implications of Nuclear Power Production," Bernard T. Feld, Ph.D., Professor of Physics, Massachusetts Institute of Technology. Opening Remarks by Arvin S. Glicksman, M.D., Professor and Chairman, Section of Radiation Medicine, Brown University Program in Medicine. 9:00 A.M. to 12:00 Noon, Sayles Hall on the College Green, Brown University.

16 "TOTAL KNEE REPLACEMENT," A. A. Savastano, M.D., Surgeon-in-Chief, Department of Orthopaedic Surgery and Fractures, Rhode Island Hospital, Basic Science Lecture Series, 7th Floor Conference Room, Rhode Island Hospital A.P.C. Building, 1:00 P.M.

18 "AUTOIMMUNITY AND THE ENDOCRINE SYSTEM," Angelo M. George, M.D., Professor of Pediatrics, Temple University Medical School; Chief, Endocrine and Metabolic Services, St. Christopher's Hospital for Children, Philadelphia. Roger Williams General Hospital, Kay Auditorium, 10:30 A.M.

23 "SEPTIC SHOCK," George H. A. Clowes, Jr., M.D., Director, Surgical Research, Rhode Island Hospital. Basic Science Lecture Series. 1:00 P.M., Rhode Island Hospital A.P.C. Building, 7th Floor Conference Room.

26-27 "THE TONGUE: WHAT CAN IT TELL US?" This symposium will explore the tongue's role in diagnosing various diseases and is open to physicians and dentists. Ress Auditorium, Barus Holley Building, George and Hope Streets, Providence. For information, contact the Office of Continuing Medical Education, Brown University, Box G, Providence, RI 02912.

30 "RADIOTHERAPY OF MALIGNANT SOFT TISSUE AND BONE TUMORS," Banice Webber, M.D., Department of Radiotherapy, Rhode Island Hospital. Basic Science Lecture Series, 7th Floor Conference Room, Rhode Island Hospital Ambulatory Patient Center, 1:00 P.M.

APRIL

21 Grand Rounds with Robert Zollinger, M.D., Professor of Surgery Emeritus, Ohio State University Hospital, on gastrointestinal surgical problems. 3:00 P.M. to 5:00 P.M., George Auditorium, Rhode Island Hospital.

27 KIVEN ORATION: Dr. Theodore Cooper, M.D., Former Assistant Secretary of Health, Department of Health, Education and Welfare, "Can We Afford Cardiovascular Surgery?" 8:15 P.M., Sopkin Auditorium, Miriam Hospital.

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BROWN AND THE STATE HOSPITALS

The prime purpose of the Medical Education Program at Brown is to create and sustain a system which will continue to yield competent, skilled and humane physicians for this and other communities. Our limited resources therefore focused upon the educational rather than the human service facets of medicine; yet it would be naive to assume that either medical education or medical practice could possibly prosper in the continued absence of the other.

The state of Rhode Island maintains intensive inpatient facilities, particularly at its hospitals and the Ladd School. Dr. Joseph Bevilacqua, Rhode Island's Director of the Department of Mental Health, Retardation and Hospitals, and the Brown Office of Medical Affairs have collectively recognized the need for articulation between medical education and medical service at the State level and accordingly they have formed a working committee (comprised of J. Bevilacqua, T. Romeo, D. Greer and S. Aronson) to explore avenues through which the two institutions may work more closely together. Doctor David Greer, Associate Dean of Medicine at Brown, has been designated as the representative of the University in this area. The following are some of the accomplishments of this continuing liaison:

(1) Doctor Greer's staff has recently completed a comprehensive study of the entire patient population of the Center General and Zambarano Hospitals, providing the state of Rhode Island with data which may lead to plans for renovation, new construction, and meaningful new programming.

(2) A new teaching rehabilitation service has been established at the Center General Hospital, supervised by Doctors Carl Granger and David Greer, with about 32 beds assigned to this service.

(3) A study of the Institute of Mental Health and various regional mental health centers has recently been inaugurated, the object of the effort being the creation of a more realistic professional manpower plan for this institution. This particular study, which is subsidized by federal funds, is under the immediate supervision of Doctor Sylvia Sherwood of Brown, who is working closely with the IMH Project Director, Mr. Stanley Oglesby.

(4) Discussions and joint planning have now been established with the Division of Mental Retardation and other interested persons in order to achieve a comprehensive plan for the mentally retarded population of Rhode Island, particularly those housed in the Ladd School.

(5) In 1975, the Rhode Island Division of Vocational Rehabilitation, the Medical Rehabilitation, Research and Training Center (RT7) of Tufts University, and Brown University, Program in Medicine joined in an effort to create a more diversified and effective system of rehabilitative and restorative services within the state of Rhode Island. Its avowed goal was to encourage and integrate those social and medical resources of the community which might then better fulfill the needs of physically handicapped individuals, particularly those with long-term disabilities.

A Regional Advisory Committee, composed of the community leadership from the public and private sectors and coordinated by Ms. M. Kaplan and Doctor D. Greer was convened. Numerous task forces were assembled which were concerned with: (1) consumer needs and expectancies; (2) community resources, adaptations and social engineering; (3) registry and data collection; (4) short-term care facilities; (5) long-range care facilities. Representatives from virtually every major vol-

(Continued on Next Page)

untary and state agency within Rhode Island participate actively within these working groups; there are representatives as well from the Hospital Association of Rhode Island, Blue Cross and Blue Shield, various state and private colleges and universities, as well as the hospitals of the community. Representation from the larger state nursing homes is also incorporated within the framework of these committees.

It is expected that the first comprehensive report of the Regional Advisory Committee on Rehabilitation, summarizing the efforts and recommendations of Doctors Bevilacqua, Greer and their colleagues, shall be appearing within the pages of this **Journal** within the near future. It would not be premature, though, to identify the goals of the Committee:

1. To identify individuals as rapidly as possible who are at risk for long-term disability.

2. To fill the gaps in care which presently exist in providing preventive measures, early medical care, continuity of caree, and rehabilitation to optimal levels of self-sufficiency.

3. To provide a system of care with linkages of suitable personnel, facilities, and agencies supported by an appropriate data management process.

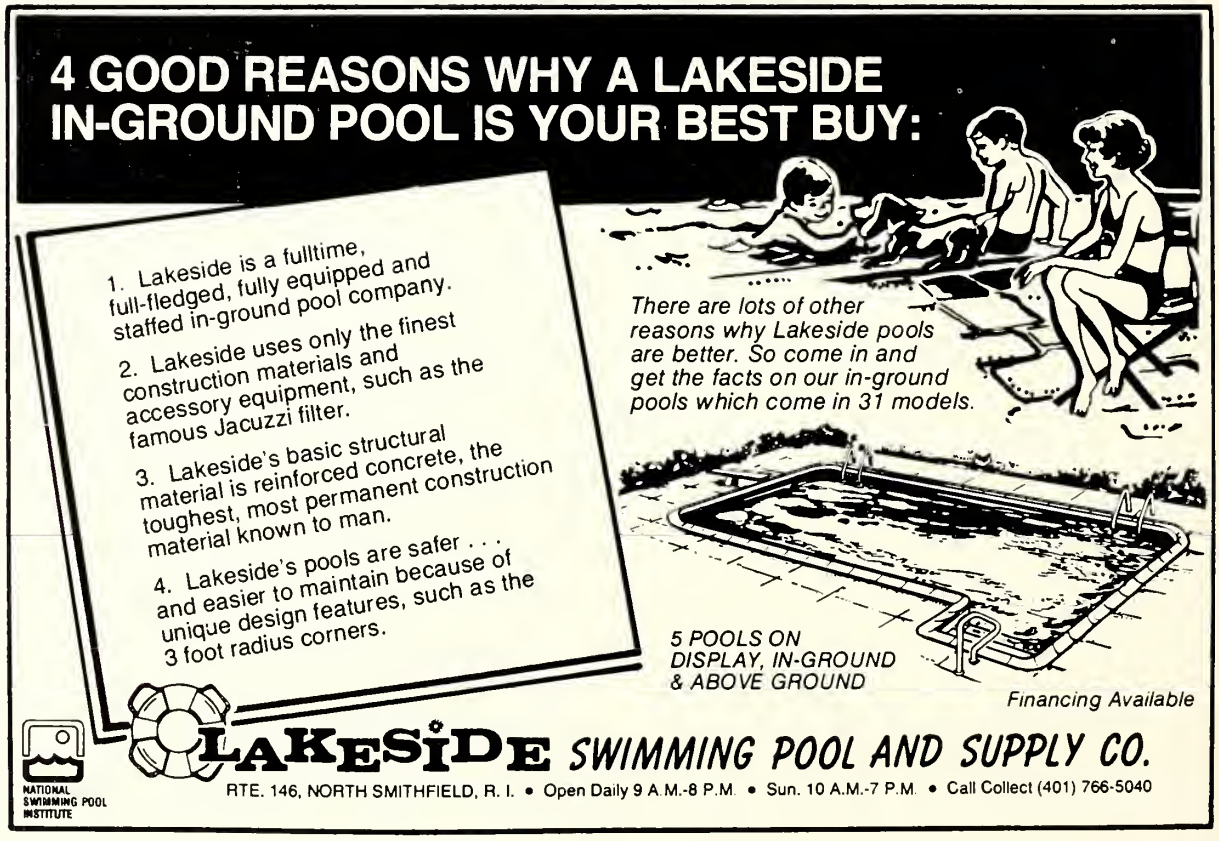
4. To contribute to the development of facilities with competency in the diagnosis, treatment, and management of handicapped individuals.

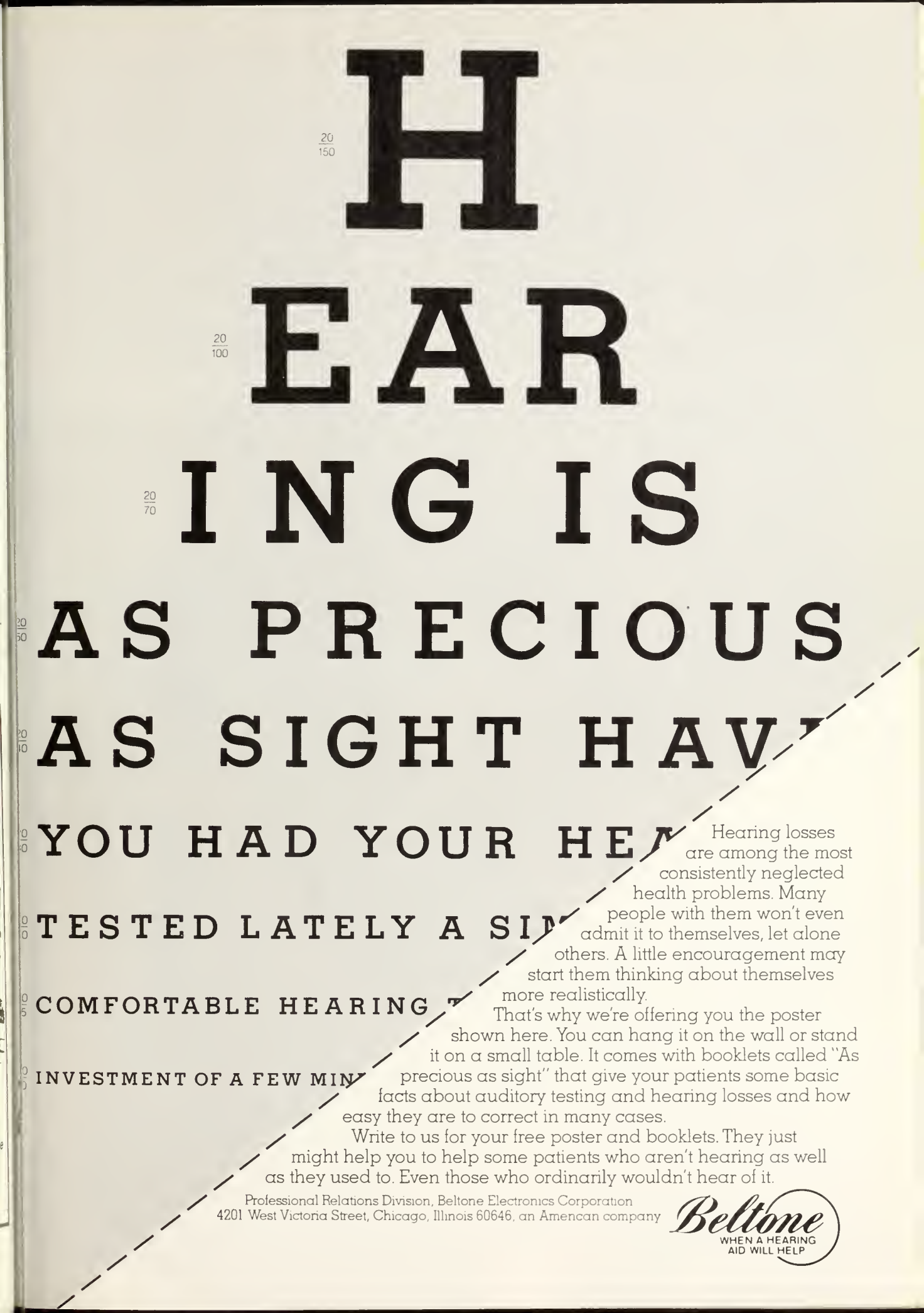
5. To contribute to the training of personnel for the care and counseling of disabled persons.

6. To facilitate the attainment of optimal levels of self-sufficiency and optimal qualities of life for each handicapped person under the most favorable cost-benefit ratios.

The needs of the patients being served by the public health care institutions in our state are many and will not be solved easily. The resources of the health professionals already serving the state, the practicing private physicians, the Medical School, and the General Assembly must be coordinated to bring about these positive changes which all participants desire. It is hoped that the start that has been made will prove to be the framework for broader cooperation.

Stanley M. Aronson, M.D.
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References:

1. Dornfeld L, Kane R: Metolazone in essential hypertension: The long-term clinical efficacy of a new diuretic. *Curr Ther Res* **18**: 527-533, 1975.
2. Data on file, Medical Department, Pennwalt Prescription Products.

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Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics, or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium® (triamterene, SK&F Co.), and leukopenia, thrombocytopenia, agranulocyt and aplastic anemia have been reported thiazides. Do periodic blood studies in cirrh to check for nondrug-related variations in b pictures, and in patients with folic acid deplet since 'Dyrenium' may contribute to appear of megaloblastosis. Antihypertensive effect be enhanced in post-sympathectomy pati Use cautiously in surgical patients. The follo may occur: transient elevated BUN or creati or both, hyperglycemia and glycosuria (dial insulin requirements may be altered), hype cemia and gout, digitalis intoxication (in h kalemia), decreasing alkali reserve with pos metabolic acidosis. 'Dyazide' interferes fluorescent measurement of quinidine.

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JOSEPH J. BAKER, M.D.

Doctor Joseph J. Baker, a Providence physician until his retirement in 1970, died April 14, 1976. He was 57 years of age. Doctor Baker was chief of the U.S. Veterans Administration's nationwide mental health program. He also was superintendent of Butler Hospital, the first director of the Butler-Bradley Health Education Center, a member of the Rhode Island Foundation and the Governor's Mental Health Council, and chairman of the Mental Health Committee of the Rhode Island Medical Society. He left Rhode Island in 1970 to become director of psychiatry, neurology and psychology services of the Veterans Administration.

▲ ▲ ▲

PAUL E. BOUCHER, M.D.

Doctor Paul E. Boucher, a Woonsocket physician, died on December 11, 1976 at the age of 69. He was a past president of the Woonsocket District Medical Society and its treasurer for 25 years, and was a former member of the Board of Examiners of the Chiropractors Society. Doctor Boucher was also a former Woonsocket Public Health Director.

▲ ▲ ▲

DOMENICO CALISE, M.D.

Doctor Domenico Calise, a Providence physician for 47 years, died on October 21, 1976 at the age of 69. Doctor Calise was a World War I Army veteran.

▲ ▲ ▲

RALPH DiLEONE, M.D.

Doctor Ralph DiLeone, A Providence physician for 50 years, died on November 30, 1976 at 81 years of age. Doctor DiLeone was on the staffs at Rhode Island Hospital, Chapin Hospital and Women and Infants Hospital.

▲ ▲ ▲

CHARLES DOUCET, M.D.

Doctor Charles S. Doucet, a Central Falls physician, and surgeon on the staffs of Notre Dame Hospital and Roger Williams Hospital, died March 2, 1976 at the age of 83. During World War I, Doctor Doucet served in the 76th Division Medical Corps and was discharged as a lieutenant colonel. In World War II, he served as a port surgeon for the U.S. Army in Ireland.

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JOSEPH L. DOWLING, M.D.

Doctor Joseph L. Dowling, a Providence physician, died on November 1, 1976 at 85 years of age. Doctor Dowling was an Army veteran of World War I, and served as chief of ophthalmology at Camp Jackson, Columbia, S.C. He was on the staffs of St. Joseph's Hospital, Rhode Island Hospital and Memorial Hospital.

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HENRI E. GAUTHIER, M.D.

Doctor Henri E. Gauthier, a Woonsocket surgeon and former chief of surgery at Woonsocket Hospital died February 2, 1976 at 79 years of age. He was a former assistant medical examiner and served on a number of state boards, including the Comprehensive Health Planning Advisory Council and the state Board of Examiners in Medicine. He was a president of the Woonsocket District Medical

(Continued on Next Page)

Society and the 95th President of the Rhode Island Medical Society. Doctor Gauthier served in World War I as a sergeant.

▲ ▲ ▲

EDWARD W. GROVE, M.D.

Doctor Edward Grove, a former Narragansett physician, died this year at the age of 73. He served in the Marine Corps from 1941 to 1946, and was hospital medical officer at the Rhode Island Medical Center.

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THOMAS F. HEAD, M.D.

Doctor Thomas F. Head, a Providence physician, died on July 12, 1976 at 50 years of age. Doctor Head was director of obstetrics and gynecology at St. Joseph's Hospital. He was president-elect of the Rhode Island Medical Society and former speaker of its House of Delegates. He was also former president of the Providence Medical Association, past president of the St. Joseph's staff and a member of the board of directors of Blue Shield of Rhode Island.

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JAMES P. HEALEY, M.D.

Doctor James P. Healey, a Pawtucket physician, died on June 6, 1976. He was a past president of the Rhode Island Medical Society. Doctor Healey was a World War II Army physician, discharged with the rank of colonel.

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LINWOOD H. JOHNSON, SR., M.D.

Doctor Linwood H. Johnson, Sr., a Westerly physician and surgeon, died October 27, 1976 at the age of 86. At Westerly Hospital he was the first surgeon to administer spinal anesthesia. Doctor Johnson was former president of the Westerly Hospital medical staff and the Washington County Medical Society. He served in the Navy Medical Corps from 1917 to 1923.

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WILLIAM L. JOHNSON, M.D.

Doctor William J. Johnson, a Wakefield physician, died on July 5, 1976 at the age of 76. Doctor Johnson was a World War I Navy veteran.

▲ ▲ ▲

HAROLD LIBBY, M.D.

Doctor Harold Libby, a retired Providence physician, died on December 1, 1976 at the age of 91. He was a former staff member of Rhode Island Hospital, Providence Lying-In, and Miriam Hospital.

▲ ▲ ▲

LEO R. LICIS, M.D.

Doctor Leo R. Licis, a Cranston physician, died on August 9, 1976. He was director of the screening unit of the Charles V. Chapin Hospital and director of the admitting and screening unit of the Institute of Mental Health at Howard.

▲ ▲ ▲

JOHN D. PINTO, M.D.

Doctor John D. Pinto, a Westerly physician, died on August 21, 1976. He was chief of staff at Westerly Hospital, was the hospital's chief of medicine from 1964 to 1972, and president of the staff from 1967 to 1968. Doctor Pinto was a Navy lieutenant commander in World War II. He was past president of the southern division of the Rhode Island Heart Association and the Rhode Island Society of Internal Medicine.

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WILLIAM ORIN RICE, M.D.

Doctor William Orin Rice, a Warwick physician, died on April 23, 1976. Doctor Rice headed the infirmary at Howard and was superintendent of the infirmary at the Rhode Island Hospital. He was past vice-president of the New England Hospital Association and a former member of the Medical Advisory Council.

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FRANCESCO RONCHESE, M.D.

Doctor Francesco Ronchese, a Providence physician, died on March 25, 1976. Doctor Ronchese was former chief of dermatology at Rhode Island Hospital and was clinical professor of dermatology, emeritus at Boston University. He was a past vice president of the American Dermatological Association, an honorary member of the New England Dermatological Society and several foreign dermatological societies.

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Books Received For Review

The Editor acknowledges the receipt of the following books and thanks the publishers for sending them. We shall have as many as possible reviewed. The volumes are greatly appreciated and will be added to the Library's collection where they will be available to readers.

GOING SANE by Joseph Hart, Ph.D.; Richard Corriere, Ph.D.; and Jerry Binder, Ph.D. New York, Dell Publishing Company, Inc., 1975. $4.95

COPING WITH FOOD ALLERGY by Claude A. Frazier, M.D. New York, Quadrangle/The New York Times Book Company, 1974. $9.95

THE MEDICAL SCHOOL ADMISSION ADVISER by Marvin Fogel, M.D. and Morton Walker, D.P.M. New York, Hawthorn Books Inc., 1976. $5.95

CLINICAL METHODS edited by Kenneth Walker, M.D., FACP, W. Dallas Hall, M.D., FACP, J. Willis Hurst, M.D., FACP, FACC. 2 Vols. Boston, Butterworths, 1976. $24.50

GROWTH, MATURATION, AND AGING by Tadayoshi Imaizumi. Tokyo, Kugayama Press, 1976.

CURRENT OBSTETRIC & GYNECOLOGIC DIAGNOSIS & TREATMENT by Ralph C. Benson, M.D. Los Altos, California, Lange Medical Publications, 1976. $16.00

LABOR & DELIVERY: AN OBSERVER'S DIARY by Constance A. Bean. New York, Doubleday & Company, Inc., 1977. $7.95

SOCIAL RESPONSIBILITY: JOURNALISM, LAW, MEDICINE; Volume II — 1976 edited by Louis W. Hodges. Washington and Lee University, 1976. $2.50 paperbound (postpaid from the publisher).

1977 MEDICAL AND HEALTH ANNUAL edited by Richard Pope. Encyclopaedia Britannica, Inc., 1976. $14.95

CURRENT MEDICAL DIAGNOSIS AND TREATMENT by Marcus A. Krupp and Milton J. Chatton. 16th Annual Revision. Los Altos, California, Lange Medical Publications, 1977. $16.00

UNDERSTANDING ARTHRITIS & RHEUMATISM by Malcolm I.V. Jayson, M.D. and Allan St. J. Dixon, M.D. New York, Dell, 1976. $1.75



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Joshua D. Gutman, M.D.
1257 Seventh Avenue
San Francisco, CA 94122
Specialty: Family Practice

* * *

Robert J. Goldstein, M.D.
108 Presidents Lane #6
Quincy, MA 02169
Specialty: Internal Medicine

(Continued on Next Page)

Suketu Nanavati, M.D.
Beth Israel Medical Center
10 Nathan D. Perlman Place
New York, NY 10003
Specialty: Cardiology

* * *

Charles Gradinger, M.D.
71 Finchley Road
Montreal, Quebec, CANADA
Specialty: Pediatrics

* * *

Kirit D. Trivedi, M.D.
546 W. Ridgeway Street
Warrenton, NC 27589
Specialty: General Surgery (Emerg. Med.)

* * *

Dr. Richard B. Circeo
369 Coral Sea Circle
Fort Lee, VA 23801
Specialty: Diagnostic Radiology

* * *

Darayes S. Mobed, M.D.
80 Guion Place
New Rochelle, NY 10801
Specialty: General Surgery

* * *

Paul G. Hess, M.D.
Strong Memorial Hospital
Rochester, NY 14642
Specialty: Cardiology

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Paramaribo, Suriname, SOUTH AMERICA
Specialty: Otolaryngology

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Charles Graeber, M.D.
2929 Radcliffe
Iowa City, IA 52240
Specialty: Internal Medicine

* * *

Michael C. Magee
1543 Ferrell Road
Chapel Hill, NC 27414
Specialty: Urology

* * *

G. B. Krishna, M.D.
9332 Cherry Hill Road — No. 201
College Park, MD 20740
Specialty: Urology

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Jamaica, NY 11432
Specialty: Internal Medicine

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Alan R. Crebo, M.D.
973 N. Gadsden Place
Tuscon, AZ 85710
Specialty: Ophthalmology

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Edward Salmon, M.D.
10800 No. Military Trail
Tanglewood Apts. #512
Palm Beach Gardens, FL 33410
Specialty: Urology

* * *

Joseph H. Cunningham, M.D.
2816 Wayne Avenue
Iowa City, IA 52240
Specialty: Internal Medicine

* * *

Mark L. Higham, M.D.
56 Woodbury Road
Asheville, NC 28804
Specialty: Internal Medicine Cardiology

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Charles F. Shiffer, M.D.
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Cuilderland, NY 12084
Specialty: Internal Medicine, Nephrology

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Continued on Page 96)



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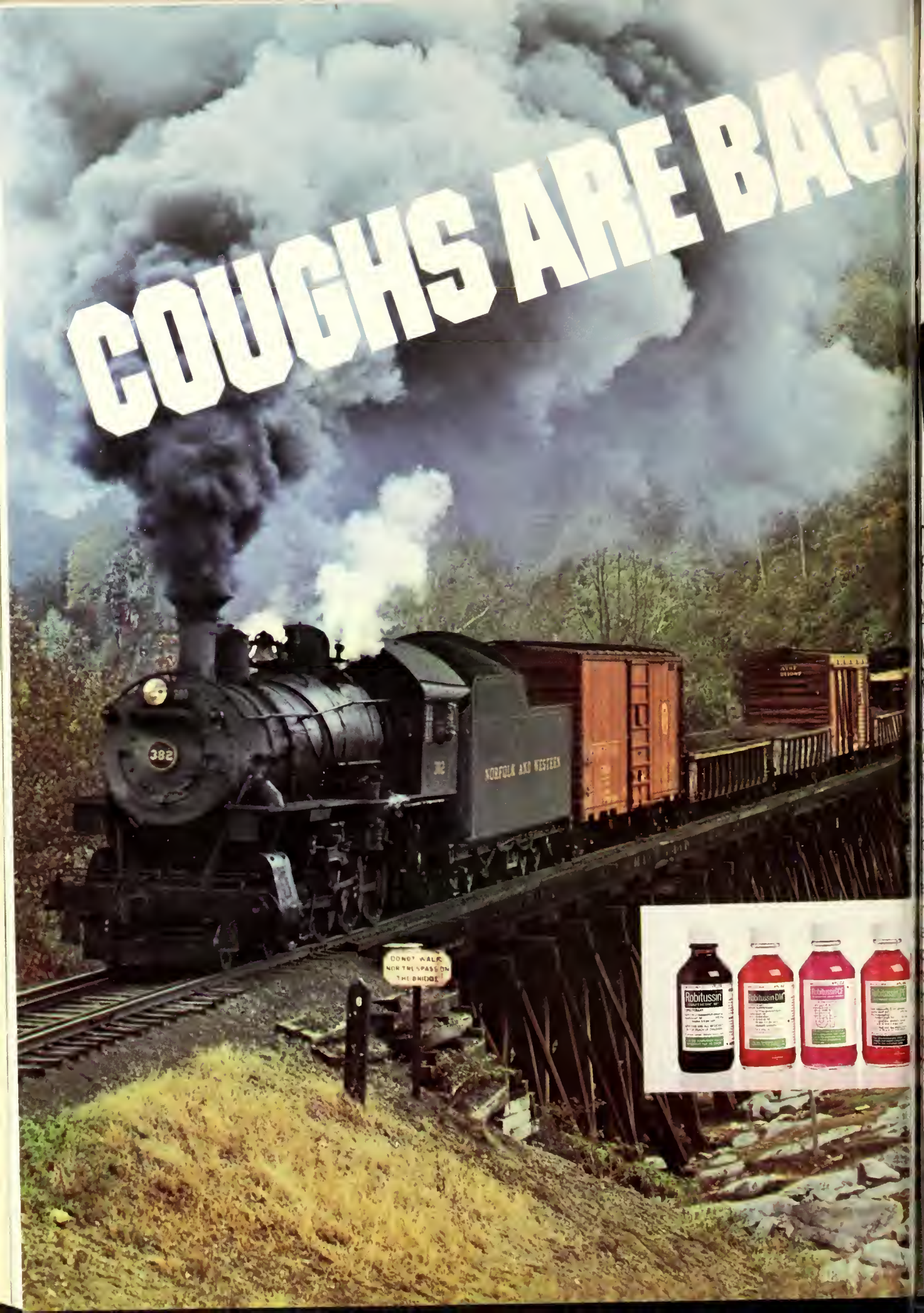
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HOTO: Norfolk & Western Branch Train 2 west bound near Alvarado, Va (Oct., 1956). e reaches the highest point of any railroad the Rockies (elevation 3,577 ft.) with a m grade of 3%. It crosses 108 bridges, 00 ft. long! Photo by O. Winston Link.

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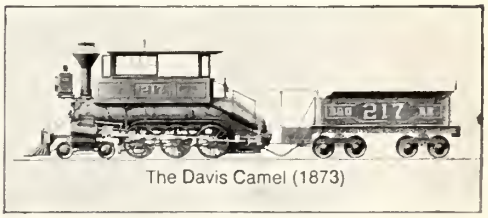
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Idiopathic Hemochromatosis, Long Term Treatment And Hepatoma: A Case Report And Review Of The Literature

Case Is The First With Long-Term Follow-Up Developing Hepatoma Despite Treatment

By Daniel C. Wistran, M.D. and Constantine S. Georas, M.D.

Hemochromatosis is a pathologic entity characterized by fibrosis or cirrhosis of the liver with extensive iron stores and evidence of increased iron in other organs such as the pancreas, heart, pituitary, and adrenals. Trosier[1] first described hemochromatosis in 1871, but not until the papers of Sheldon in 1935[2], and Finch and Finch[3] in 1955 had such extensive reviews embracing over 1,100 patients with hemochromatosis been published. Since then there has been controversy about the etiology, pathogenesis, and genetic implications as well as the spectrum of disorders referred to as hemochromatosis. MacDonald[4] stressed that many other conditions, such as portal fibrosis, hepatomegaly, and cardiac cirrhosis, have been reported incorrectly as hemochromatosis and maintained that hemochromatosis is an acquired disease. Crosby[5], however, argued that idiopathic hemochromatosis is genetically determined with expression of the disease in family members ranging from minor abnormalities in iron metabolism to frank cirrhosis, bronzed skin, and diabetes. Most investigators agree that the development of a hepatoma is a complication of hemochromatosis that may be difficult to prevent by vigorous treatment with phlebotomy. We wish to report the development of a hepatoma in a patient with idiopathic hemochromatosis after 13 years of phlebotomy treatment.

DANIEL C. WISTRAN, M.D., *Senior Resident, Department of Medicine, Rhode Island Hospital, and Teaching Fellow, Department of Medicine, Brown University Division of Biological and Medical Sciences.*

CONSTANTINE S. GEORAS, M.D., *Physician, Department of Medicine, Rhode Island Hospital, and Assistant Clinical Professor, Department of Brown University Division of Biological and Medical Sciences*

CASE REPORT

H. C. was 48 years old when she was seen for the first time in 1960 with a three year history of mild labile hypertension. She was a gravida I, para I with menopause at age 46. She smoked one pack of cigarettes daily for several years. Her alcoholic intake was

(Continued on Next Page)

limited to an occasional cocktail before dinner. Past medical history was essentially unrevealing with the exception of pyelonephritis at age 47. After clinical and laboratory investigation she was treated with salt restriction and thiazides. From 1960 to 1962 she gradually developed hepatomegaly, bronzed skin, and mild diabetes mellitus and complained of frequent palpitations. Blood chemistries revealed an elevated serum iron and low iron binding capacity, high alkaline phosphatase, and elevated SGOT with 6 per cent BSP retention. An open liver biopsy in December 1962 established the diagnosis of hemochromatosis (Fig. 1).

The liver specimen was somewhat granular in appearance and deep brown in color. The parenchyma was divided into variable-sized nodules by bands of dense fibrous connective tissue of low cellularity with focal proliferation of the bile canaliculi. There was abundant brown pigment deposited mainly in the liver cells, but also occurring in bile duct epithelium and occasionally in the interstitium. The iron stain was strongly positive and more prominent toward the periphery of the nodules.

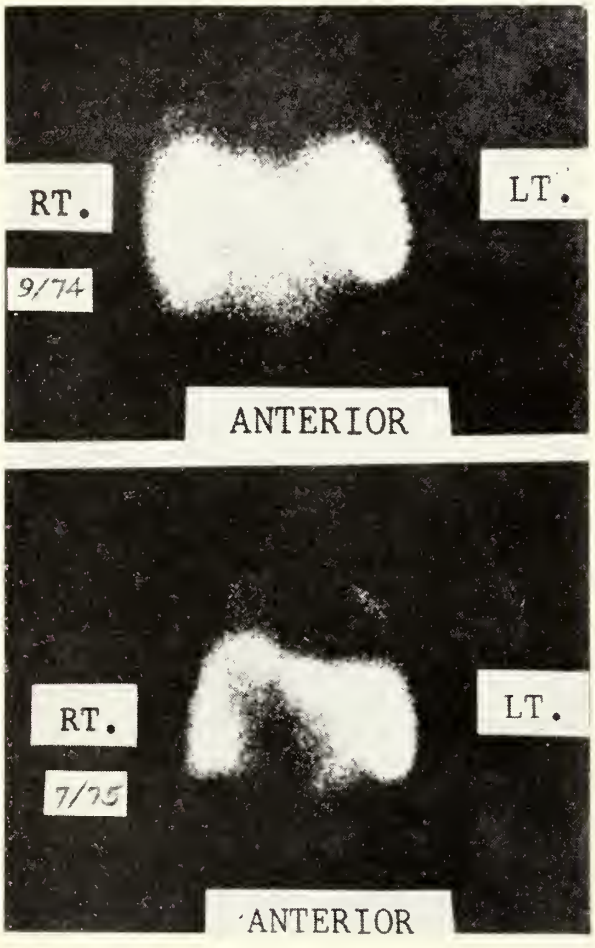


Figure 2. Liver-spleen scans ten months apart demonstrated the evolution of a filling defect.

During this admission frequent episodes of paroxysmal supraventricular tachyarrhythmia were documented. The patient was treated with digitalis and thiazides, chlorpropamide at the onset, and insulin soon thereafter. A vigorous program of iron removal was instituted. During 1963, 36 phlebotomies were carried out, and during the ensuing two years 500 ml of blood were removed every six weeks, maintaining her hemoglobin level at 11 to 12 grams per cent until 1966, when iron studies revealed a low serum iron and high iron binding capacity (44 and 480 mcg per cent respectively). Venesection therapy was tapered off to 500 ml every three months with subsequent normal serum iron and iron binding capacity. The patient experienced significant clinical improvement with this therapy, with striking diminution of the bronzed skin color and a general sense of well-being. Venesections were discontinued for a period of 18 months, but in 1974 the serum iron was again elevated to 225 mcg per cent with an iron binding capacity of 31 mcg per cent. Phlebotomies were again instituted. Gradually congestive heart failure with angina pectoris and joint pains of both hands were added to her clinical picture. She began to develop a more pronounced hepatomegaly with a distinctly palpable mass over the epigastrium; she lost 30 pounds in weight and complained of severe epigastric pain.

Liver scan performed yearly suggested diffuse liver disease and splenomegaly, but a final study in July 1975 revealed a patchy irregular area of diminished activity consistent with a destructive process (Fig. 2). Her clinical state deteriorated slowly, and she expired six months later.

At post mortem the liver weighed 2090 gms and showed micronodular cirrhosis. The hepatic parenchyma was dark brown in color and fine streaks of connective tissue circumscribed the nodules. There was a large central tumor mass (Fig. 3) which measured 8

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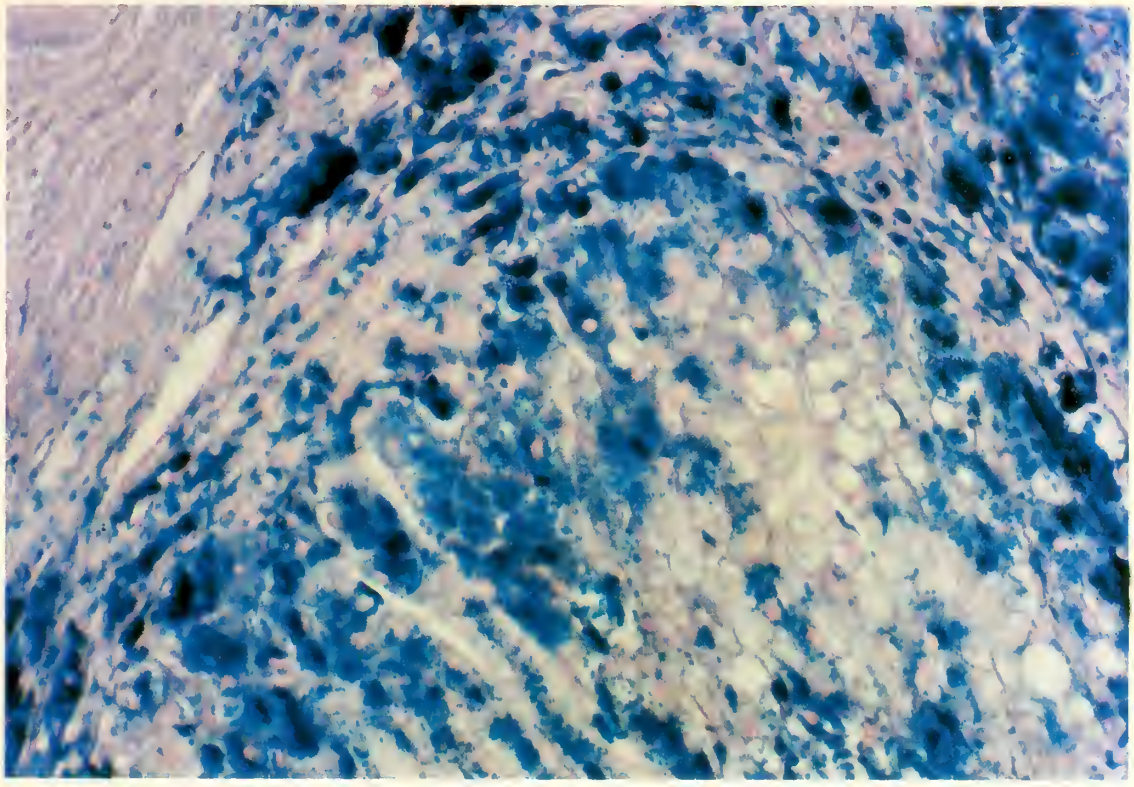


Figure 1. H. C. Liver biopsy showing evidence of cirrhosis and a severe deposition of iron pigment in hepatocytes, bile duct epithelium and also in the connective tissue. (Iron stain 250x.)



Figure 3. H. C. Gross photograph of the liver showing the large tumor mass. The liver parenchyma appears nodular and with fine white streaks. The capsule shows large areas of fibrous scarring.

cm in its largest diameter corresponding to a hepatocellular carcinoma of a moderately well differentiated type. The tumor had invaded the portal venous system, and satellite tumor nodules were also found. Microscopically the diagnosis of cirrhosis was confirmed. Numerous fibrous bands extended throughout the parenchyma dividing it into nodules. There was mild bile duct proliferation, and occasional bile casts within canaliculi were seen. No hemosiderin pigment was detected and the iron stain was completely negative (Fig. 4, see pg. 70).

The spleen weighed 250 gms. showed chronic passive congestion, and was free of hemosiderin pigment. The pancreas was small and fibrotic, and microscopic sections showed marked interstitial fibrosis, with parenchymal atrophy. The islets were normal. Iron stain was negative. The heart weighed 250 gms. There was absence of significant coronary atherosclerotic changes, and microscopic sections showed enlargement of individual fibers with large hyperchromatic nuclei suggesting hypertrophy. No iron was demonstrable. The lungs showed chronic passive congestion and edema with interstitial fibrosis. The bone marrow showed diffuse marked hypoplasia.

FAMILY HISTORY

The pedigree of her family is shown in (Fig. 5). Parents died of unknown causes. The propositus had four siblings, two brothers and two sisters. One brother died at age 52 with a cerebral hemorrhage and was found to have hemochromatosis at autopsy (Fig. 6, see pg. 70). The two sisters, both childless, and the other brother have abnormal serum iron levels (Table 1). Two younger members of the third generation have also shown serum iron abnormalities, but to a lesser degree.

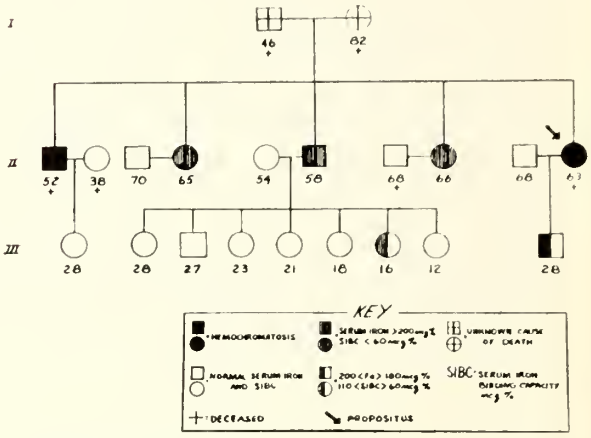


Figure 5. Family pedigree: All siblings of propositus have abnormal iron studies.

Table 1
Iron Values in Siblings

Patient	Age, Race, Sex			Serum Iron Mcg%	Iron Binding Mcg%
F. F.	66	W	F	296	25
M. T.	65	W	F	259	24
F.F.	58	W	M	230	59

W=White F=Female M=Male

Table 2
Discharge Diagnosis of Hemochromatosis 1960-1974

	Patient	Age, Race, Sex			Biopsy	Manifestations
Secondary	A. F.	70	W	F	Positive	CHF, Diabetes
	H. C.	63	W	F	Positive	CHF, Diabetes
	H. S.	61	W	M	Positive	CHF, Diabetes
Primary	M. S.	60	W	M	Not Done	Thal-Minor, CHF
	C. F.	68	W	F	Not Done	Thal-Minor, CHF
	Z. T.	11	W	M	Post Mortem	Thal-Major, CHF
	M. M.	80	W	F	Not Done	Aplastic Anemia, Diabetes, CHF
	D. F.	22	W	M	Not Done	Diabetes, Sickle Cell

CHF=Congestive Heart Failure Thal=Thalassaemia
W=White F=Female M=Male

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DISCUSSION

Idiopathic hemochromatosis is a rare disease. The incidence varies according to the type of hospital population[3]. We reviewed the case records at Rhode Island Hospital for a 14 year period (1960-1974) and found eight patients who were labeled as having had primary hemochromatosis from among approximately 24,000 admissions per year. Previous estimates of the incidence of hemochromatosis have been one per 20,000 admissions.[3, 6, 7]

Three patients (Table 2) had definitive liver biopsies for hemochromatosis in the presence of a positive family history and no history of alcohol abuse. Five patients were coded as having primary hemochromatosis, but were considered by us to have had the secondary form. Eight additional patients were not included in the table because there was no documentation of a serum iron determination or liver biopsy to substantiate the diagnosis of hemochromatosis. Thus, out of a total of eight patients, the diagnosis of primary hemochromatosis was confirmed in only three. Each of these three patients had clinical signs of congestive heart failure, diabetes mellitus, and bronzed skin. In two patients (A.F., H.S.) the congestive heart failure was the initial most difficult clinical problem, while in one (H.C.) it was diabetes mellitus. In each of the five cases of the secondary form, congestive heart failure was the most important clinical problem. Thus, seven of eight patients had congestive heart failure as the initial major manifestation of iron overload.

The genetic implications of primary hemochromatosis are well documented in the literature[2, 5, 8, 13, 15], although the exact mode of inheritance is not clear[14]. Most authors have stressed the importance of screening family members for elevated serum iron levels. Furthermore, a program of phlebotomies has been suggested in patients who have no clinical evidence of hemochromatosis, but have serum iron elevation and a positive family history[8, 10, 13]. In a study of six asymptomatic siblings of a documented case of hemochromatosis, one sibling's biopsy was consistent with hemochromatosis, all six had abnormal glucose tolerance tests, and all had increased amounts of stainable iron in the liver.[13] Liver biopsy has been shown to be the most important method of making the diagnosis, because this organ best reflects iron overload or depletion[3, 15, 16].

The mechanism of iron overload is still not completely understood, but a disorder of iron absorption in the intestinal mucosa has been considered to be an important factor [17, 19, 21, 22, 27]. Normal iron absorption is believed to be a sensitive, finely regulated process, divided into two phases. The first is a rapid transfer of iron from the lumen across the cell regulated by various carrier proteins, one of which may be transferrin. This is known as the chelatable iron pool. In the second phase, iron accumulates in the mucosal cell bound to ferritin, possibly the rate-limiting step in transfer of iron to the serum. As pointed out by Beamish et al[23], at the onset of iron accumulation an imbalance may exist between intercellular chelatable

Table 3
Reported Cases of Hepatoma in Treated Hemochromatosis

Age	Sex	Duration of Therapy	Family History	History of Alcohol Excess	References
55	M	6 months	NS	NS	Davis et al 1953 (57)
NS	NS	6 months	NS	NS	Finch et al 1955 (3)
51	M	48 months	NS	Yes	Davis 1955 (58)
46	M	36 months	No	No	Hurst et al 1961 (59)
58	M	48 months	NS	Yes	Jandl et al 1963 (60)
56	NS	11 months	NS	Yes)	
60	NS	28 months	NS	No)	Williams et al 1969 (61)
48	NS	36 months	NS	No)	
51	NS	42 months	NS	No)	
54	M	25 months	NS	No	Davis et al 1971 (62)
48	F	13 years	Yes	No	Present report

M=Male F=Female NS=Not Stated

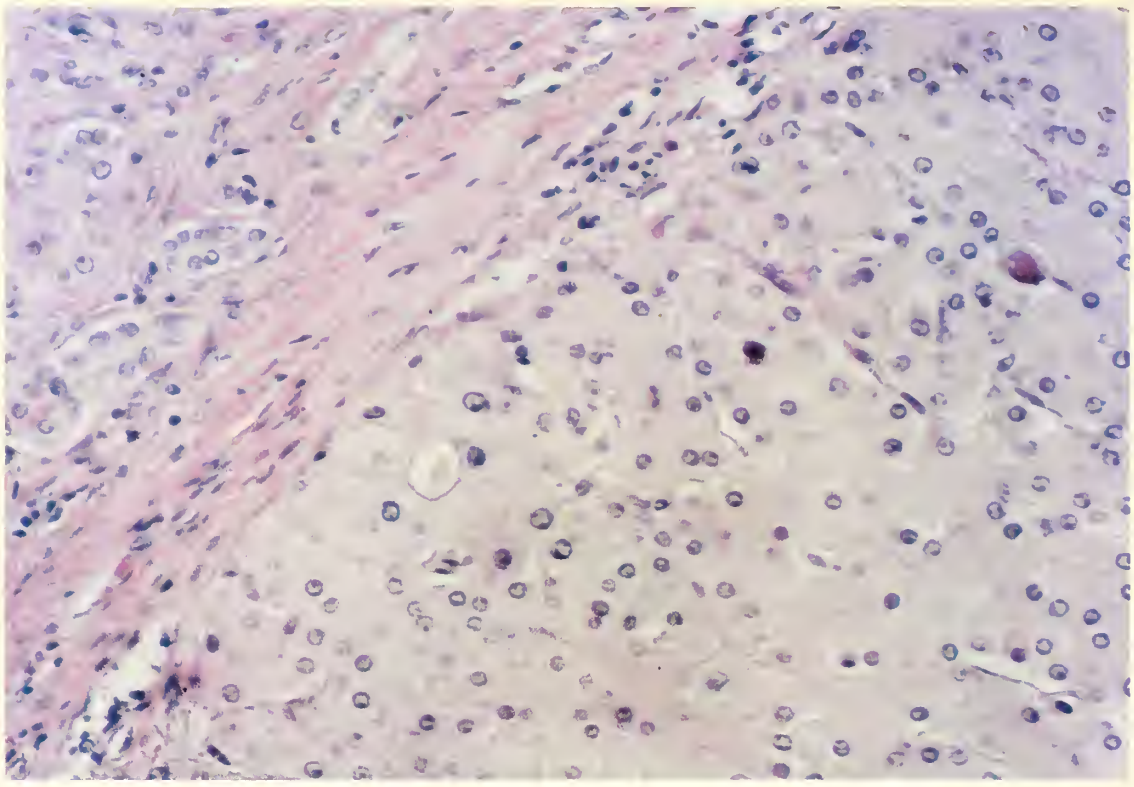


Figure 4. H. C. Section of the liver stained for iron shows disappearance of stainable iron pigment from all tissue elements. A coarse band of fibrous tissue and a group of bile ductules is also seen. (Iron stain 250x.)

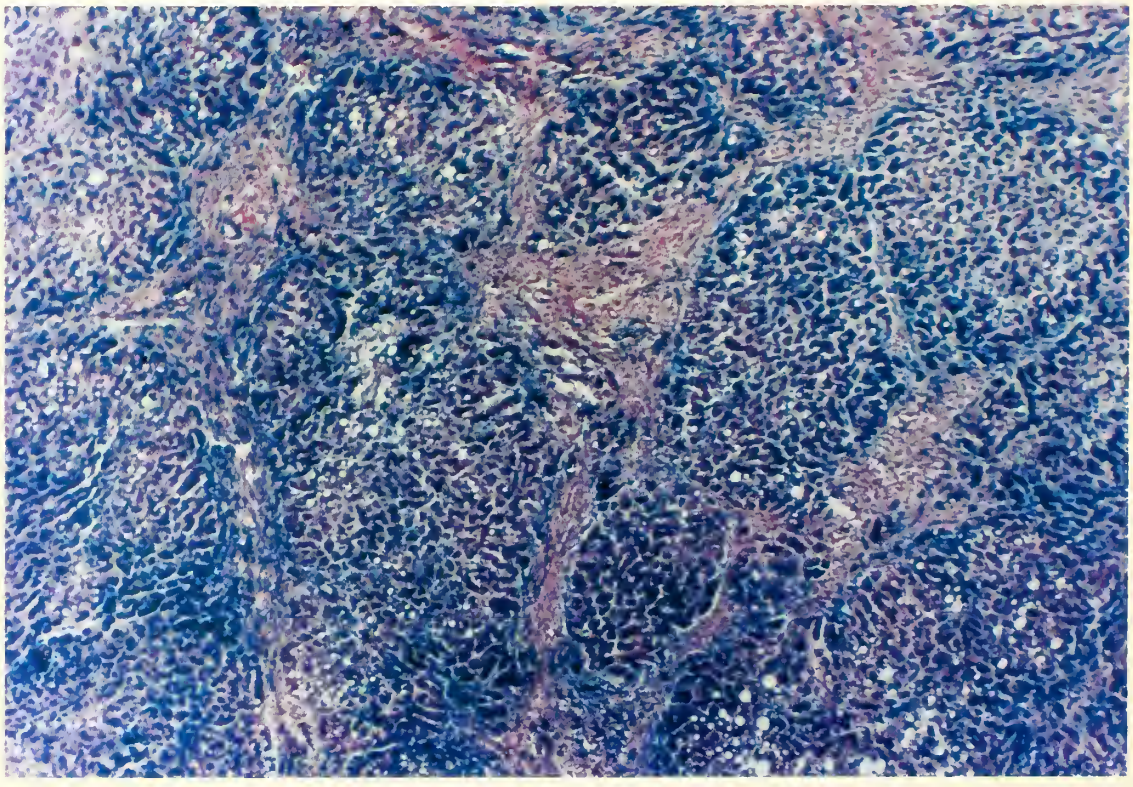


Figure 6. J. F. Section of liver, showing the altered hepatic architecture with fibrous bands and marked deposition of iron pigment, primarily deposited in the hepatocytes. (Iron stain 63g.)

iron and ferritin, caused by an impaired synthesis of ferritin, resulting in high transferrin iron concentration. The increasing amount of iron accumulation eventually stimulates ferritin synthesis. Recently the role of ferritin has been reexamined as a measure of the iron stores in normal individuals and in patients with hemochromatosis[24, 26]. Measurement with an immunoassay technique revealed normal serum ferritin values of 69 ng/ml in males and 35 ng/ml in females compared to 1200 to 5040 ng/ml in patients with hemochromatosis[25]. The defect in protein synthesis[21, 27] in the intestinal mucosal cell might fit one suggested autosomal mode of inheritance[14]. In such a schema the heterozygote, depending on the amount of expression of the abnormal gene, might make inadequate ferritin, which over a number of years could result in increased iron absorption. Although not proved, this theory provides a logical explanation of the pathogenesis of this disease. Alternatively, some have suggested an absence of a gastric inhibitory factor, which then over a period of many years allows increased amounts of iron absorption[20]. A recent study has further documented abnormal absorption of iron particularly after phlebotomy[19].

Deposition of iron in the parenchyma of various organs in hemochromatosis leads to the usual clinical triad of skin pigmentation, hepatomegaly, and diabetes mellitus. The liver has been studied intensively in the past, and recently the cellular damage and cirrhosis have been attributed to the unbound ionic form of iron[29]. Noteworthy was the total absence of stainable iron in the liver, heart, pancreas, adrenals, and pituitary in our case. Frey[15] emphasized the importance of liver biopsy in making the diagnosis of hemochromatosis and pointed out the slowness of the removal of the iron stores in liver biopsies taken from patients who had undergone phlebotomies for more than three years. The total absence of iron in our case demonstrates the difference between a pathological diagnosis and clinical diagnosis of hemochromatosis after repeated venesections.

One of the most obvious manifestations in hemochromatosis, hyperpigmentation of the skin, is present in 90 per cent of patients and usually involves the face, the extremities[3, 30], and in some cases the buccal mucosa[30]. It is now believed that the appearance is not due to the accumulation of iron with a bluish tinge or bronzed appearance as proposed by Sheldon in 1935[2] and Finch in 1955[3]. Recent evidence has confirmed that the hyperpigmentation is due to excess melanin and not a combination of hemosiderin and melanin[30]. Indirect evidence is provided by the absence of hyperpigmentation in a vitiliginous area of skin in a patient with hemochromatosis[31]. It has been suggested that iron injury to tissue enzyme systems such as tyrosinase may lead to melanocyte stimulation. It is of interest that patients undergoing phlebotomy treatment often have a lessening of the hyperpigmentation, as demonstrated in our case.

Liver studies with the aid of an electron microscope have shown that the deposits of iron occur as ferritin and clumps of hemosiderin, apparently in association with lipids, carbohydrates, and other substances of uncertain nature[32, 33]. One study suggests that it is the unbound ionic form of iron that produces the cellular damage and cirrhosis in hemochromatosis[29].

Even though carbohydrate intolerance exists in 80 per cent of patients with hemochromatosis, the cause is felt to be multifactorial and probably not due to mere deposition of iron in the pancreas with resultant beta cell dysfunction. Significant improvement in the insulin requirements after institution of phlebotomy treatment has been noted[34]. However, in some patients the requirements actually increase after phlebotomy.[35] In one series 40 per cent improved, whereas the remaining 60 per cent did not. In the same series a higher incidence of a diabetic family history was strong evidence that iron overload is only part of the reason for diabetes in primary hemochromatosis. The exocrine functions of the pancreas also have been studied recently. Patients with primary hemochromatosis who were generally hypersecretors of pancreatic fluid converted to normal values after phlebotomy[36]. No pancreatic insufficiency was demonstrated. Arthritis is another aspect of the disease not appreciated by early investigators[37]. Patients

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with hemochromatosis beyond age 50 seemed to have a higher incidence of arthritis, characterized by involvement of the metacarpphalangeal joints with cystic periarticular changes, narrowing of joint space, and chondrocalcinosis with minimal iron infiltration[38, 39]. Other joints were less frequently involved. Our patient had mild arthritis of the metacarpophalangeal joints.

The pituitary gland has been another interesting facet of hemochromatosis. The testicular atrophy and loss of libido seen in approximately 15 per cent of males was thought to be secondary to iron infiltration of the testes[2] and in a later phase of the disease secondary to the estrogen imbalance seen in cirrhosis[3]. However, pituitary failure is common, having been found in nine of 15 patients studied in one series, four of whom had severe hypofunction[40]. Another important contribution was the comparison of patients with cirrhosis to those with hemochromatosis[41]. Almost half of the patients with hemochromatosis had depression of one or more pituitary trophic hormones, whereas none of the patients with cirrhosis had evidence of such dysfunction. Most studies have revealed a good correlation between dysfunction and the amount of iron in the pituitary, although controversy exists on this point[41]. Sudden unexplained collapse and death as reported in the literature in some cases with hemochromatosis may be related to this pituitary-adrenal axis failure[42, 43].

The hemodynamic consequences of hemochromatosis are well known and usually present as congestive heart failure, hence the phrase "the iron heart is not a strong heart, but a weak one"[44, 45]. The failure may be predominately rightsided and may also simulate constrictive pericarditis, although the latter is rare[46]. Patients may present with a cardiomyopathy without the usual stigmata of hemochromatosis[47]. Arrhythmias are frequent and commonly supraventricular in origin[45]. The myocardium can be extensively involved in hemochromatosis, with iron deposition more prominent in the subepicardial region[45]. Dissection of the conduction system in one study[49] showed that the AV node was extensively involved, whereas the SA node was spared. It is not surprising, therefore, that heart block[50] has been reported in hemochromatosis, and in one case progression of the conduction defect occurred despite adequate treatment[50]. Although the pessimistic outlook held in the 1950s is now changing with the aggressive program of venesections[48, 49], heart failure due to the secondary forms of hemochromatosis does not respond as well to therapy.[75]

The development of hepatoma has been previously reported in treated hemochromatosis[3, 51-56] (Table 3), but the effect of phlebotomy treatment is still doubtful. Davis et al[51] in 1953 collected from the literature 10 patients with hemochromatosis treated by phlebotomy. He added five patients of their own who had had daily phlebotomies of 500 ml until the hemoglobin reached levels of 10.5 to 11.0 gm/100 ml and the hematocrit about 35 per cent. Thereafter, phlebotomies were done at weekly intervals. One of their patients was a 55 year old male who died of hepatoma six months after therapy. No mention was made of family history, alcohol abuse, or stainable iron in the liver.

Finch and Finch[3] reported a patient who was phlebotomized weekly, but developed anemia after six months of therapy at which time liver biopsy revealed a hepatoma.

Davis et al[52] in 1955 reported the follow-up of three previously reported patients treated with phlebotomy for two to three years. One of the patients, a 51 year old male, developed a hepatoma after four years of therapy. Noteworthy, however, was the history of excessive alcohol abuse for 20 years, no family history of hemochromatosis, and a phlebotomy regimen that was often interrupted by alcoholism. Iron stores were absent as revealed in a limited postmortem examination.

Hurst et al[53] in 1961 reported a 46 year old male who had undergone phlebotomy treatment for three years before he developed a hepatoma. There was no history of alcohol abuse or a family history of liver disease. At the time of death no iron pigment was present in the liver, but extensive cirrhosis was found.

Jandl et al[54] in 1963 reported a 58 year old man who had consumed a tonic containing iron for several years and was a chronic alcoholic. He underwent phlebotomy for four

years, but developed a fulminant type of polycythemia and hepatoma. Iron was still present in the liver cells and minimally in the bile duct epithelium and connective tissue at death.

Williams et al[55] reviewed 40 patients with hemochromatosis treated with venesections. Four patients treated for a period ranging from 11 to 42 months developed hepatoma, but liver histology or detailed descriptions were not given. Increased alcohol consumption was noted in one patient.

Finally, Davis et al[56] in 1971 reported a patient who was a 54 year old male, non-alcoholic, and with a negative family history. Work-up revealed an adenocarcinoma of the rectosigmoid, which at laparotomy was confined to the bowel. The cell type was reported as "large atypical glandular structures, lined by tall columnar cells with nuclear atypia and loss of polarity." The liver biopsy revealed increased iron stores, but no mention was made of the architecture. Phlebotomy was discontinued for a short time. Twenty-five months after initial treatment he developed right upper quadrant pain, and at laparotomy was found to have multiple tumor masses, biopsy of which was interpreted as hepatoma.

The study of hepatoma has recently been aided by the recognition of a specific alpha globulin in the serum (alpha-feto protein)[57, 62]. Some reports have suggested that tumor size[63] could be correlated with this protein, whereas others did not find a correlation either with size or degree of differentiation[62]. Most authors believe that significant elevation occurs in 50 to 80 per cent of patients with hepatoma[58, 59, 61,62]. An elevated value has often suggested the diagnosis in patients being evaluated for malignant disease. It is, therefore, considered to be a useful test[68].

The etiology of hepatoma,[64, 65] its changing incidence,[66, 67] geographic variability,[56, 69] and paraneoplastic syndromes[70, 71] have been well outlined in previous reports. The results of treatment have been disappointing, although there have been isolated reports of improvement with surgery[72] or chemotherapy.[73]

Various tests have been advocated as being helpful in the diagnosis of hemochromatosis. They include serum iron, iron binding capacity, differential ferroxamine test, excessive hemosiderin in the bone marrow, skin, prostatic secretions, and urinary sediment, and hemosiderosis of gastric mucosa. The importance of serum ferritin levels in the precirrhotic phase of hemochromatosis has recently been challenged.[74]

As Finch and Finch pointed out in 1955,[3] and as clearly shown by Frey et al[15] in 1961. the only definitive test is biopsy of the liver. It should be emphasized, however, that the serum iron is usually a good indicator of iron excess and facilitates screening of family members, a mandatory step in documented cases of hemochromatosis.

Removal of iron by venesection has been the established treatment of hemochromatosis for over 30 years, but what has not been well documented is the occurrence of hepatoma after adequate and prolonged treatment. Our extensive review of the literature has revealed only a few established cases with long-term follow-up.[53, 55] The first two cases reported[3, 51] were followed for too short a period to allow significant conclusions, whereas others,[52, 54] had a strong history of alcohol abuse and, therefore, do not represent pure idiopathic hemochromatosis. The case reported by Davis et al[56] was complicated by adenocarcinoma of the bowel, while those presented by Williams et al[55] did not provide detailed descriptions for comparison.

We believe that our case emphasizes the simplicity and effectiveness of long-term therapy as shown by clinical improvement over a period of 13 years and the total absence of stainable iron at post mortem. It suggests, however, that the development of hepatoma is related more to the cirrhotic process than to the iron overload **per se** and, therefore, may not be a preventable complication once cirrhosis has developed.

SUMMARY

A case of idiopathic hemochromatosis treated with phlebotomy for 13 years is presented. Hepatoma developed despite prolonged and adequate removal of iron as demonstrated by absent stainable iron at post mortem. Recent developments in hemochro-

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matosis are discussed as well as previously reported cases of hepatoma treated with venesections. It is evident from the literature that: 1) There are few well documented cases of treated idiopathic hemochromatosis and hepatoma. 2) Our case is the first reported with long-term follow-up developing hepatoma despite treatment. 3) The hepatoma may result from the cirrhotic process and may not be related to iron overload.

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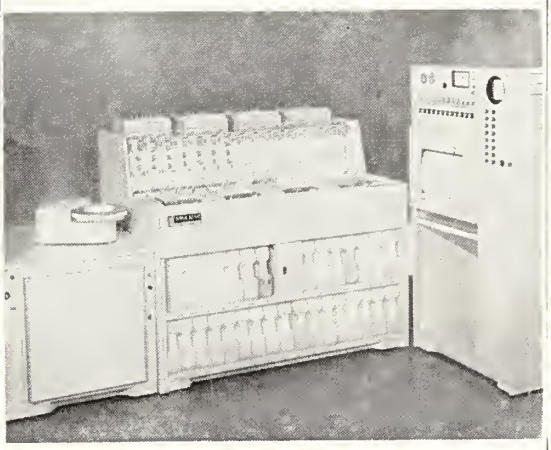
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Experiences With The Garden Operation In Resistant Tennis Elbow

In Resistant Cases Lengthening Of The Extensor Carpi Radialis Brevis Tendon Is An Effective Procedure

By A. A. Savastano, M.D. and Louis Corvese, M.D.

Tennis elbow is essentially an affliction of middle age. Only a very few who seek relief are active tennis players. Usually it is a self-limited condition which seldom persists longer than 12 months. However, in a small percentage of the cases the pain persists in spite of various forms of conservative measures. It is some of these cases which require surgical intervention.

ESSENTIAL FEATURES

The essential features in diagnosis are: 1. tenderness on pressure over the radio-humeral gap during resisted extension of the elbow on making a fist with the elbow extended, 3. acute discomfort in the radio-humeral gap during resisted extension of the wrist in radial direction, 4. acute discomfort on the radial side of the elbow during resisted extension of the middle finger, and 5. initiation or exacerbation of pain upon raising a cup, using a hammer, or lifting a shovel.

POSSIBLE CAUSES

The possible cause of tennis elbow include ligamentous strain, nipping of synovial fringes, bursal irritation, teno-periosteal tears, disturbances of local metabolism, degenerative changes in the orbicular ligament and cervical root irritation.

A. A. SAVASTANO, M.D. and LOUIS CORVESE, M.D., *Department of Orthopedic Surgery, Rhode Island Hospital.*

ANATOMICAL CONSIDERATIONS

The most constant feature of the syndrome is the production of pain during extension of the wrist in radial deviation. This movement is performed by the extensor carpi radialis longus and brevis muscles. Tenderness in tennis elbow is mostly located over the lateral condyle. Consequently, the fault is more likely to lie with the short radial extensor, which arises mainly from the epicondyle, than with the long extensor which arises more proximally along the lateral epicondylar ridge.

The extensor radialis brevis is the only member of the superficial extensor group which arises from the lateral ligament, which in turn blends with the capsule of the elbow and is inserted into the orbicular ligament.

TREATMENT

Treatment may be conservative or operative.

Conservative Treatment: This often includes splinting, physical therapy, manipulation, local injection of hydrocortisone, and anti-inflammatory medication by mouth.

Operative Treatment: When conservative

measures fail, surgery is indicated. Many operations have been devised for treatment of tennis elbow. These include excision of the tender area, ablation of the common extensor origin, resection of the orbicular ligament, and denervation of the radio-humeral joint. They all share the disadvantage of a direct attack on the region of the elbow, some of which result in limited motion of the elbow, persistent pain, and severe heterotopic bone formation.

Since we agree with Garden that the contraction of the extensor carpi radialis brevis is the principal factor involved, we decided to treat some of the resistant cases by means of Z-lengthening of the extensor carpi radialis brevis (Garden Operation).

We have done this procedure on six cases, each of which had received the gamut of conservative measures including hot soaks, physical therapy, and local injections of hydrocortisone. In each case local tenderness and pain on the lateral aspect of the elbow disappeared shortly after the Z-lengthening of the extensor carpi radialis brevis.

OPERATIVE PROCEDURE

The operation may be performed under local anesthesia, but general anesthesia is preferred with the arm under pneumatic tourniquet control.

A small incision is made over the dorsolateral aspect of the forearm just proximal to the point at which the thumb extensors cross the radius obliquely. The extensor carpi radialis brevis is exposed. The extensor carpi radialis longus and brevis muscles are seen immediately underneath the tendons of the extensor pollicis brevis and abductor pollicis longus. The extensor carpi radialis longus presents as a flattened tendon which, when drawn aside, will expose the underlying tendon of the extensor carpi radialis brevis.

(Continued on Page 112)

Z-lengthening of the tendon is carried out and the incision is closed. No splinting is necessary. The only postoperative restriction is the avoidance of vigorous use of the arm for the first few days after surgery.

RESULTS

As shown in Table I there is 1. consistent relief of pain in the elbow, 2. no weakness in the forearm or hand (such as weakness in radial extension or weakness of grip), 3. consistent benefit with full and lasting relief, and 4. limited loss of time from work dictated largely by the requirements of wound healing.

SUMMARY

1. Tennis elbow is an affliction of the elbow occurring largely in middle aged people. Many theories exist as to etiology. Some believe that degenerative changes in the orbicular ligament may underly its pathology.

2. It has been shown that most patients may be relieved by conservative treatment, including extra-articular or intra-articular injections of hydrocortisone.

3. Operative intervention is required only in the resistant cases.

4. The operative intervention may be either directly at the elbow or just proximal to the radial side of the wrist joint.

5. Contraction of the extensor carpi radialis brevis is thought by some to be the principal pain-producing factor. Z-lengthening of the tendon of this muscle has been found to relieve the symptoms in most cases.

6. Z-lengthening of the extensor carpi radialis brevis does not result in diminution in the power of the grip or in the power of dorsiflexion of the wrist.

7. The operation is very simple when compared to other procedures for the relief of the pain of tennis elbow.

8. Since the operative attack is away

Table 1

Name	Side	Sex	Race	Age	Date	Proc.	Prev. Surg.	Anes.	Tour.	Results
A. F.	R	M	C	52	3-22-72	G	No	Gen.	+	Excellent
E. C.	L	F	C	49	7-10-74	G	Yes	Gen.	+	Excellent
L. T.	R	M	C	41	2-13-75	G	No	Gen.	+	Excellent
M. K.	L	F	C	47	4-14-75	G	No	Gen.	+	Excellent
H. J.	L	F	C	51	7-18-75	G	No	Gen.	+	Excellent
F. L.	L	F	C	63	2- 8-76	G	No	Gen.	+	Excellent

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AMERICA'S LEADING NATIONAL BRAND OF GENERICS

Should A Physician Incorporate? Some Considerations In Light Of The Pension Reform Act Of 1974

Whether You Incorporate Or Not, You Should Not Lose The Tax Benefits Of A Pension Plan

By Thomas W. Pearlman, Esq.

A goodly number of physicians in Rhode Island and throughout the country have incorporated their practices, or are considering the step. Some experts now believe, in light of the new Federal Pension Law which increases the deductions for so-called HR-10 Keogh Plans for the self-employed pensioner to 15 per cent of earnings with a $7500 per year maximum deductible contribution plus a $2,500 maximum non-deductible contribution, that one of the primary advantages of incorporating has been eliminated. Every physician has his own financial and legal situation which necessitates consultation with his own accountant and lawyer. However, it is the opinion of this author that few physicians should pass up the opportunity to adopt a pension plan, whether as a self-employed individual or as a professional corporation. It is one of the most sensible and attainable tax "shelters" available.

A few of the arguments both for and against the physician's incorporating in light of the Pension Reform Act of 1974 are presented.

THOMAS W. PEARLMAN, ESQ., *Graduate of Harvard Law School and Member of the Law Firm of Pearlman & Vogel.*

DISADVANTAGES OF INCORPORATING

1. **Extra Meetings and Fees:** The professionals must hold meetings, keep records, file annual reports, pay annual fees, and maintain, by appearance and performance, the resemblance to conventional business corporations.

2. **More Paper Work:** While the professional corporation pays its employees (professional and laymen) regular "wages," it must, in turn, satisfy state and Federal obligations imposed upon corporate employers, (such as payment for FICA, withholding, disability, and unemployment tax, and the ever-growing paperwork therefore). Withholding of taxes paid into an escrow account weekly is usually done instead of the quarterly estimated tax payments for individuals.

3. **Possible Extra Corporate Taxes:** The corporation must face the ever-present tax collector, who wants a share of the professional corporation's earnings that was not distributed to the professional employees as compensation.

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1. **Good Alternative to Keogh (HR-10):** In late 1974, the Employee Retirement Income Security Act of 1974 (ERISA) was passed by Congress. Its primary purpose was to protect the interests of participants in pension plans. In addition it provided a viable alternative to the professional corporation for the self-employed professional.

The increase of the maximum annual contribution by ERISA to the lesser of 15 per cent of earnings or $7,500 has provided for the self-employed person a substantial retirement opportunity. For example, a contribution of $7,500 per year for 30 years at an assumed interest rate of 8 per cent would provide a lump sum of approximately $847,000 at retirement. In addition, an annual voluntary contribution of 10 per cent of earnings or the lesser of $2,500 can be made. While this is not deductible, the income or interest from this up to $2,500 contribution accumulates tax free until distributed.

5. **Another Alternative — IRA:** The IRA Plan is available to any working person (including a professional) who is not a participant in a qualified pension or retirement plan, including an HR-10 plan. The individual may contribute the lesser of 15 per cent of his earnings, or $1,500 (maximum yearly) — and may deduct the amount from his earned income for the year — to a trust investment in a bank account, mutual funds, annuities, or certain other approved depositories. The **earnings** on such deposits or other investment forms as well as the contributions by the individual **are not taxes until distribution.** Distribution before the designated age(59½) brings a penalty tax.

Under the IRA Provisions a husband and wife may, if each has separate earned income, deduct the permitted amount, allowing a possible $3,000 deduction on their return(s).

6. **Immediate Vesting:** The IRA and HR-10 plans (the latter assuming there is at least one 10 per cent partner participating in the plan) vest immediately so that a terminated participant or employee has a 100 per cent vested interest in contributions made for his benefit which cannot be forfeited by termination of employment.

ARGUMENTS FOR INCORPORATING

1. **Bigger Tax Shelter:** Corporate defined contribution retirement plans can provide a tax shelter for as much as 25 per cent of compensation to a maximum deductible contribution of $25,000 per year compared to $1,500 under IRA and $7,500 under Keogh. With a defined benefit plan (i.e. a plan that provides a fixed benefit at retirement such as 50 per cent of compensation) the annual benefit at retirement cannot exceed $75,000 per year, (plus adjustments for cost of living). The annual deductible contribution can exceed $25,000 with the exact annual contribution dependant upon the amount necessary to fund the fixed benefit under the actuaried method used by the plan.

2. **Estate Tax Exemption:** Under both IRA and Keogh, the money accumulated in retirement funds is subject to the federal estate taxes, if the individual who established the plan dies and it is paid to his beneficiary. Qualified corporate retirement funds, however, are specifically exempt from estate taxes should an employee die before retirement and his accumulated funds or an insured death benefit is paid to his designated beneficiary other than his estate.

3. **Delayed Vesting:** Vesting of benefits, i.e. full ownership of pension rights, may be deferred for 10 years in a corporate plan although in most professional corporations the IRS will insist on 40 per cent vesting after four years of service, 5 per cent vesting for the next two years, and 10 per cent thereafter. In contrast, a Keogh plan (with a 10 per cent partner) must provide immediate 100 per cent vesting.

4. **Eligibility:** A Keogh plan with immediate vesting may provide that up to three years of service is required for entry into the plan, while a corporate plan without immediate vesting generally must provide for entry after one year of service. The cost factor for including employees in a plan must be considered based on the expected turnover rate of the employees, the eligibility period provided in a Keogh plan and the vesting period provided in a corporate plan.

5. **Life Insurance:** A corporation can provide a group term life insurance plan for its

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PERIPATETICS

Chinese Medicine

There May Still Be Much To Learn From 5000 Years Of Traditional Practice

By Jay N. Fishbein, M.D.

A recent visit to Hong Kong has prompted me to reflect on the venerable traditions of Chinese medicine. Hong Kong may be considered the crossroads of East and West. It is also the center of the Chinese medicinal trade. As a physician I found these herb shops with their peculiar odors and strange fragrances, with their endless rows of glass jars filled with exotic plants, roots, seeds, grasses, and powders quite intriguing.

HERB SHOPS IN HONG KONG

What really impressed me was their vague resemblance to the pharmacies of my youth, with their medicinal smell, where the major occupation was the filling of prescriptions. So few of them are left. Most drugstores today are virtual department stores, with the drug departments relegated far to the rear. These Chinese herb shops looked more like a pharmacy is supposed to look.

The larger shops may carry as many as 10,000 varieties of remedies, most of them unknown to Western medicine. These establishments vary in size from large, well-stocked shops to the small, dusty, fly-blown neighborhood stores that stock only the common nostrums familiar to their clientele.

Just as our shopping centers and department stores have drug departments, their counterpart is found in Hong Kong, where a prescription may be left to be filled and picked up when shopping is completed. While the compounding of a prescription has become a lost art in the West, the Chinese pharmacist still prepares his in much the same manner as have his predecessors for generations, indeed for centuries.

It was a fascinating experience to visit the larger shops where an entire wall would be lined with tier upon tier of drawers and other walls with row after row of glass jars, carrying such exotic items as teeth of various animals, shells, moulds, cobwebs, fungi, lichens, tiger bones, horns of deer or rhinoceros, shark fins, crab eyes, turtle and oyster shells, dragon-flies, beetles, earthworms, spiders, and an assortment of dried reptiles, in addition to the common plants and roots, ginseng, and mango seeds. Jute bags hanging

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JAY N. FISHBEIN, M.D., *Consultant to the Rhode Island Department of Health. Formerly Practicing otoeryngologist.*

from the ceiling, their contents marked in Chinese letters, exuded a tantalizing aroma difficult to define.

In addition to the herb shops there are also stores that specialized in snakes and reptiles, which are kept in covered glass tanks. The season snakes are considered to be at their best is before they are about to go into hibernation. The customer inspects his snake in the same manner as one would pick the fish he wants for his dinner at one of the floating restaurants. The snakes lay motionless. Occasionally one would raise his head drowsily and indicate that it was alive.

The shop owner picks it up casually, just behind the head, and removes it from the tank. He lets it dangle to the floor, places his foot upon its tail to stretch it taught and expertly slices off its head. The snake is wrapped in paper and taken home where it will be boiled and used in a soup for the prevention of winter illnesses.

Massive jars of wine also line the shops in which snakes are pickled, and this wine is used freely during the long, cold winter months, both as a prevention and as a cure for colds, coughs, and bronchial ailments. Snake venom may be added to the wine to increase its potency. Not only is it considered a powerful agent, but it is believed to be an effective aphrodisiac.

Considerable experience is necessary to keep track of such a staggering array of items, infinite in their variety, not only of plants, bark, nuts, and roots, but also of the bones of various animals, tusks, antlers, and innumerable varieties of dried reptiles and insects. Years of study are necessary to become familiar with the vast catalogue of herbs and their characteristics.

To be eligible to take the National Board Examinations in Nanking in mainland China five years of preparation are required. Even after that extensive period of study, only about 10 per cent of candidates will succeed in passing the examinations. Many herbalists who fail still enter practice, but usually confine their activities to the smaller towns and villages. As there is a marked shortage of practitioners in the People's Republic of China, no restrictions are placed upon them. These herbalists considered eligible to take the National Board Examinations are required to be familiar with at least 2,000 of the 10,000 known herbs, although only about 500 are in common usage.

CHINESE AESCULAPIUS

According to legend Chinese medicine goes back many thousands of years, to the Emperor Shen Nung, who wrote the first book on herbs and classified 365 drugs. He is honored as the Chinese Aesculapius, the father of medicine, and his statue is usually displayed in a place of honor in herbal shops before a bowl of burning incense. This custom is usually observed in the larger and busier shops.

The Emperor Chin Shi Hung-ti, who built the Great Wall of China, decided to burn all medical books and start afresh. Fortunately, some of the ancient texts, such as the **Annals of Medicine,** escaped this destruction and present a fount of knowledge to present-day practitioners.

The earliest and most important medical treatise is credited to Huang Ti, the legendary Yellow Emperor, who lived between 2700 and 2600 BC and consists of a mere 18 volumes. The orthodox practitioners of traditional medicine regard it as their highest authority and refer to these tomes regularly. Over the past 5,000 years it has undergone little change and is as important today as it was under the ancient dynasties.

It was centuries ahead of European medicine, and even today the Chinese masses have more faith in their herbalists than in Western medicine. It must be remembered that Chinese medicine is the oldest medical system in the world and had reached a high level of development when most of the world was still living in the dark ages, with a very primitive knowledge of drugs.

Chinese doctors trained in Western medicine were chiefly graduates of medical schools established by foreign missionaries. Physicians of both cults were far too few in number to treat the 750 million Chinese. The traditional Chinese doctors were not only more accommodating, but the public was more familiar with them and had greater faith in their tried and proven herbal medicines.

The Western trained physician preferred to locate in the major cities of Eastern China where he had the convenience of laboratories

and modern hospital facilities. Not only were his fees considerably higher, but his prescriptions were invariably beyond what the peasant was able to pay. Herb medications were not only much cheaper than Western drugs, but were considered more efficacious.

ROLE OF THE HERBALISTS

Herbalists claim that they use drugs in the natural state and prepare them in accordance with the patient's particular need, meticulously weighing and measuring out the proper dosage, while Western physicians use them in pre-packaged form, capsules or liquids, without regard for the age or weight of the patient, or his physical condition at time of treatment.

Factors of no small importance are the shortages of doctors with even primitive training in the hinterland, which would include the New Territories of Hong Kong, and the marked poverty of the peasants, which makes even the small fees native doctors charge, often beyond their means. Many go directly to the herb shops when they are ill, just as we go to our local pharmacists. The shopkeeper cuts up roots, stalks, and herbs with a well-honed knife and, as the prescription indicates, grinds them together with shells and bones, with mortar and pestle and weighs out each ingredient carefully on a delicate set of scales.

The ginseng root is a recommended specific for a score of diseases. The best grade comes from Manchuria. The Chinese consider it more efficacious if dug from the ground at midnight under a full moon. The root is steamed, and the fluid tastes like tea. It is particularly desirable as a tonic after debilitating illnesses, and is believed to keep men young and virile. As the result of the huge foreign demand, particularly from the United States, the price has trebled and quadrupled. Because of its popularity and widespread use there are shops that deal exclusively in the many varieties of ginseng.

Despite the education of the Hong Kong Chinese, their exposure to Western medicine, and the fact that many are well educated and speak impeccable English, harbalists remain very popular. Today in Hong Kong, there are a half dozen schools teaching traditional medicine. Three year night courses are also available where the student studies several hours in the evening, three or four nights a week.

PREVENTIVE MEDICINE

In China considerable emphasis was placed on preventive medicine. Wealthy Chinese paid their physicians to keep them well. Illness was considered to be due to the incompetence of the physician. The Chinese attitude was that curing a disease was like digging a well after one became thirsty. It took many centuries for this concept to be appreciated by the Western world, where illness or deformity was regarded as punishment for sin.

In China as in other countries the practice of medicine could be a hazardous profession. Emperors and nobles were generous with their physicians and showered them with honors and wealth as long as they themselves remained in good health. In ancient China a physician, who regardless of his fame failed to cure his patron, could be tortured and executed. A favorite method was having him boiled in oil.

When the favorite daughter of Emperor Tsung became ill, more than 20 eminent doctors from all parts of the empire were called to court, but none was able to restore her to health. The emperor in his grief, embittered by their incompetence, had all executed. Our present-day physicians complain about high malpractice insurance rates — the court physician had other problems to contend with. The rules of etiquette were extremely strict regarding direct contact with a female patient. For taking the pulse a ribbon was wrapped about the woman's wrist. The doctor held the other end, and from this he was supposed to be able to catch the impulse.

TAKING THE PULSE

The Chinese physician takes the pulse in a different manner from his Western counterpart. From the artery of the left hand he will detect the pulse from the heart. Another finger observes the pulse from the liver and the next finger the pulse from the kidneys. With the other hand one finger will find the pulse from the lungs and the next finger from the spleen. He is also able to palpate the pulse of the fetus and from it can determine congenital anomolies.

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While Western doctors may scoff, the Chinese considered the abilities of their native physicians superior to that of the foreign physicians, who like other foreigners were classed as "barbarians." The Chinese doctor is supposed to be able to detect at least 20 different pulses. It is necessary to spend from six months to a year of intensive study to be able to differentiate the various pulses, during which time the physician develops an extraordinarily sensitive touch.

Doctor Richard Selzer in a recent article in **Harpers Magazine** describes the examination of a patient by Yeshi Dhonden, the personal physician to the Dalai Lama. He took the patient's hand in both of his and with his eyes closed would feel for her pulse. For a half hour he remained suspended above the patient. Finally the Tibetan physician straightened, placed the woman's hand upon the bed, and without uttering a word began to leave the room.

In the conference chamber he gave his diagnosis, which the interpreter translated. He spoke of winds coursing through the body of the woman, currents breaking against barriers, eddying. He went on to say, that these vortices were in her blood. Long before she was born a wind had come and blown open a deep gate that must never be opened. Through it charge the full waters of her river, as the mountain stream cascades in the springtime, battering and flooding her breath.

The diagnosis was then given by the chief of the medical service: "Interventricular septal defect, with resultant heart failure." This was the gateway in the heart that Yeshi Dhonden stated must not be opened. Through it charged the full waters that flooded her breath. Here was an Oriental physician listening and miraculously understanding the sounds of the heart, transmitted through the pulse, to which Western physicians were completely deaf.

ADVENT OF THE BRITISH

The British were the first Westerners to come in direct contact with the Chinese as the result of the "Opium War" when they acquired rights to a half dozen Chinese ports. Unfortunately, because of the peculiarities of some phases of native medicine, they held all of it in contempt as barbaric and steeped in superstition, quackery, and magic. Because of the indifference of the British, other European countries also displayed scant interest in the study of herb medicine.

At the time the British first came in contact with the Chinese, they had heard of the popular "100-herb medicine" which was centuries old and believed to possess potent curative powers. They became skeptical however, when they learned of the quaint manner in which the herbs were collected and prepared: "In the early morning just before the first light of dawn the herbalist walks exactly 100 steps into the meadow and without looking in either direction picks 100 herbs. If the number of steps or herbs is not precisely 100, or if a single ray of sunshine touches the grasses, the medicine will have no power. The herbs are placed in a large kettle just as the sun rises. It is boiled for exactly four hours and strained." Because of the dross the British overlooked much that was valuable.

It is unfortunate that traditional medicine should have been brushed aside so casually and neglected rather than to have been given more careful study, as many of its worthwhile qualities were thus overlooked. Chinese medicine, which evolved and grew over so many centuries, deserved greater consideration.

Many Chinese physicians were centuries ahead of the West. Doctor Sun Sze Mo gained eternal fame through his compilation of prescriptions, which were called the "1000 Golden Prescriptions." His studies of the different types of fevers are recognized even today. On the fifth month of the Chinese Year, the "Month of Epidemics," worshippers flock to the temples to pray to him for aid.

The circulation of blood was described in China 4,000 years before Doctor William Harvey discovered it in 1616, which achievement won him a niche among medical immortals. He proved that blood flowed out of the heart through the arteries and returned to the heart through the veins. The Chinese **Canon of Medicine** stated: "The blood current flows continuously in a circle and never stops. It may be compared to a circle without beginning or end." Harvey's description was more detailed, but not more accurate.

REVERENCE FOR THE BODY

In China the human body was treated with the greatest reverence. Confucius considered it sacred. Surgery within the body was prohibited, as well as dissection. This respect for the dead also prevailed in the West. The human figure, being cast in the image of God, could not be mutilated. In the 16th century Andreas Vesalius, the leading anatomist of his day, was prosecuted for performing dissections. Trephining the skull, which was common practice among primitive people to enable evil spirits to be expelled, was never practiced among the Chinese.

Even today, relatives will not permit postmortems on patients who have died. During the period when Nationalist forces were fighting the Communists, the Kuomintang authorities supplied unlimited numbers of fresh corpses to the medical schools. As these prisoners were beheaded, the medical authorities complained that decapitated cadavers created problems for anatomical dissection. The Nationalist officers graciously offered to have the prisoners strangled instead.

During the Han Dynasty surgery reached very high levels, and major operations were performed. The first hospital in China was established in 510 AD. The Imperial Institute, which was set up in the 7th century AD, was the first medical school in the world. It had an enrollment of 350 students, who were divided among the three classes of traditional medicine: acupuncture, herb medicine, and medicine and surgery.

It is unfortunate that the British, who came in daily contact with the Chinese, should have downgraded traditional medicine. The British physician regarded the herb doctors with ill-disguised contempt as illiterate charlatans or witch doctors steeped in superstition. This was an injustice not only to the Chinese, but to the Western world, as the knowledge of acupuncture and an endless variety of drugs accumulated over so many centuries was denied us for more than a century and a half.

Medicine that had been practiced for thousands of years should have at least aroused more curiosity among Western physicians. Chinese, including those who have traveled and been educated abroad, and have witnessed the marvels of modern medicine, still show a preference for their own traditional medicine when they return home.

The herbalists practicing in the rural areas in the hinterland were invariably without formal training and education. They were necessary, as trained doctors were unwilling to bury themselves in the small, isolated, dreary villages. These itinerant, barefoot herb doctors could be recognized from the distance by the farmer working his field, as he trudged down the dusty road with his staff, and bag of herbs dangling from his waist.

If the farmer was anticipating his visit, he would rush out to the road, relate his symptoms, and receive the assortment of herbs, which would be wrapped in a leaf, with the necessary instructions. Farmers could ill afford to take time out during the planting or harvesting seasons.

CONTRIBUTIONS TO WESTERN MEDICINE

Some herb doctors picked up their knowledge of herbs from learned village elders and by experience and, if intelligent or gifted, soon became fairly proficient. A few of course were outright charlatans, and some were simply witch doctors who preyed upon the illiterate credulous peasants. Many of the drugs were known in Europe during the Middle Ages and are still in use today, except that the method of preparation differs.

Chaulmoogra oil was used in the treatment of leprosy centuries before it became known to the West. The bark of the pomegranate tree is used in the treatment of diarrhea and intestinal worms. It contains tannin, resin, and several alkaloids. Cascara-buckhorn is used as a cathartic. Kaolin, castor oil, and ephedra have been used since time immemorial. Ephedra has been used in the treatment of asthma, respiratory diseases, colds, coughs, and nasal congestion. Its use dates back for more than 5,000 years. It was introduced to the West in 1887, but fell into disuse and forgotten. In 1925 it was rediscovered and has since been used extensively in respiratory conditions, commonly in nose sprays and cough medicines.

Not surprisingly many of the medicinal plants used in China were also used in other Eastern countries, and were often prepared

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similarly. The willow for instance contains salicylic acid, of which aspirin is a derivative. It was used for centuries in the treatment of rheumatism. The dried cinchona bark yielded alkaloids, the chief of which, quinine, was useful in the treatment of malaria. Opium was considered a specific in the treatment of diarrhea and gastric ailments, and its use was mentioned in medical books as far back as 1,000 AD.. It was described by Paracelsus, a Swiss physician born in 1493, a year after the discovery of America. Incidentally, poppy juice was also used by the Egyptians as a sleeping drug many centuries before the Christian era. Europeans made extensive use of the poppy seed as a pacifier for children.

EMERGENCE OF THE BAREFOOT DOCTORS

During the early decades of the present century the Chinese faced numerous problems. The country was ravaged by warfare between the various war lords who controlled their respective provinces. The Japanese took advantage of the turmoil to invade Manchuria and swept south, attacking and destroying major cities along the coast. In addition bitter fighting began between the Communists and the Nationalist government. Meanwhile the country was being systematically looted by the Japanese and later by the Soviets.

To escape the Nationalists, who were better armed, the Communist leader Mao Tse-Tung led his followers numbering more than 120,000 men, women and children westward over the mountains during the fall of 1934 on what is referred to as the "Long March." During the year of wandering they covered over 6,000 miles, twice the width of the United States, reaching the Shensi mountain caves far to the west. Only 20,000 survived this awesome journey, which is considered a classic in military history.

During this long march they could rely only upon their herbal medicine men. Drugs were unavailable other that the plants which they found growing in the countryside and with which these doctors were familiar.

On this epic journey they suffered cruelly from hunger, from the elements, and from physical ailments and broken bones. There were no hospitals, no laboratories, no x-rays, and no pain-easing drugs. They could depend only upon the native physicians who accompanied them or the herb doctors living in the villages through which they passed.

These were illiterate barefoot peasants who had been apprenticed to village herb doctors and acquired a knowledge of herbs, the use of acupuncture, and the ability to set broken bones. They served many villages, traveling on foot as they made their rounds. Patients would await their visits, or in an emergency someone knowing their itinerary would be sent to fetch them. Mao Tse-Tung's Communist followers acquired a faith in the ability of these tireless country practitioners, which continued even after the country was liberated and the Nationalists expelled.

FRACTURES

The setting of fractures by traditional Chinese doctors is in sharp contrast to that in Western countries. The fact that these methods have been in use for over 1,000 years would indicate that they must have had some merit.

The modern school of medicine reduces fractures by a single manipulation, usually forcible and generally carried out under anesthesia. The fracture is completely immobilized, including the joint above and below the fracture. The Chinese reduce the fracture gradually, step by step, without the use of anesthesia. It permits freedom of the joints above and below the fracture. They maintain that immobilization is both unnecessary and harmful, causing muscle weakness and joint stiffness and retarding healing. The broken bone ends are held in place by wooden splints or twigs which are adjusted daily as the swelling subsides. Exercises are begun almost immediately. The fractures heal more rapidly, and the use of the limb is restored much earlier than when treated with plaster-of-paris casts. The results are surprisingly good.

ACUPUNCTURE

The Chinese believed that disease was caused by noxious spirits that entered the body. Acupuncture originated primarily to provide a means for the escape of these evil spirits. In some strange manner it accom-

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RIEF SUMMARY OF PRESCRIBING INFORMATION

*INDICATIONS. Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:

Effective: Management of nausea and vomiting and dizziness associated with motion sickness.

Possibly Effective: Management of vertigo associated with diseases affecting the vestibular system.

Final classification of the less than effective indications requires further investigation.

CONTRAINDICATIONS. Administration of Antivert (meclizine HCl) during pregnancy or to women who may become pregnant is contraindicated in view of the teratogenic effect of the drug in rats.

The administration of meclizine to pregnant rats during the 12-15 day of gestation has produced cleft palate in the offspring. Limited studies using doses of over 100 mg./kg./day in rabbits and 10 mg./kg./day in pigs and monkeys did not show cleft palate. Congeners of meclizine have caused cleft palate in species other than the rat.

Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

WARNINGS. Since drowsiness may, on occasion, occur with use of this drug, patients should be warned of this possibility and cautioned against driving a car or operating dangerous machinery.

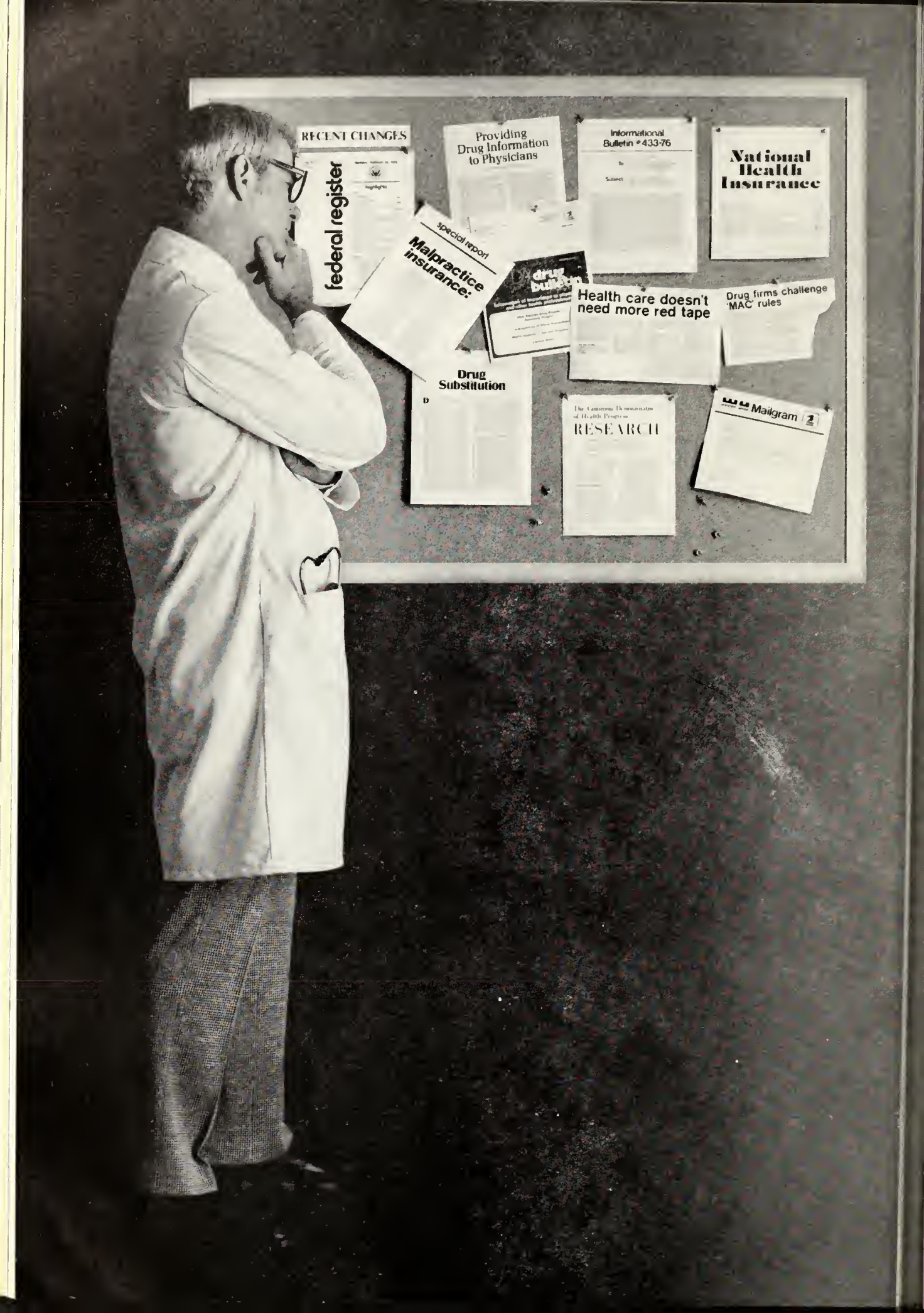
Usage in Children: Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy: See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

More detailed professional information available on request.

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RECENT CHANGES
federal register
Providing Drug Information to Physicians
Informational Bulletin # 433-76
National Health Insurance
special report
Malpractice insurance:
drug bulletin
Health care doesn't need more red tape
Drug firms challenge 'MAC' rules
Drug Substitution
RESEARCH
Mailgram

THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all kinds of scrutiny. Your control over patient therapy is being monitored, judged and occasionally abrogated, sometimes by unknown third parties.

The worry is that in the wake of this focus, the relationship between you and your patient will be weakened, without offsetting benefits. Consider three examples:

Drug substitution In most states, pharmacy laws, regulations or professional custom stipulate that your non-generic prescriptions be filled with the precise products you prescribe. But in the last five years, a dozen or more State laws have been changed, permitting the pharmacist in most cases to select a product of the same generic drug to fill any prescription.

Ironically, this dilution of physician control has taken place against a background of growing evidence that purportedly equivalent drug products may be inequivalent, since neither present drug standards nor their enforcement are optimal. In fact, the FDA itself says it has not enforced the same standards for hundreds of "follow-on" products that it had applied to the original FDA approvals. Thus physician control over patient therapy is being eroded with a risk that patients may be exposed to drugs of uncertain quality.

The major advertised claim for substitution is reduced prescription prices for consumers. Yet no documentation of any significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is a Federal regulation designed to cut the Government's drug bill by setting price ceilings for drugs dispensed to Medicare and Medicaid patients. Unless the prescriber certifies on the prescription that a particular product is medically necessary, the Government intends to pay only for the cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

It could make a difference in your practice tomorrow.

P·M·A

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INDICATIONS: Therapeutically (as an adjunct to systemic therapy when indicated) for topical infections, primary or secondary, due to susceptible organisms, as in: • infected burns, skin grafts, surgical incisions, otitis externa • primary pyodermas (impetigo, ecthyma, sycosis vulgaris, paronychia) • secondarily infected dermatoses (eczema, herpes, and seborrheic dermatitis) • traumatic lesions, inflamed or suppurating as a result of bacterial infection.

Prophylactically, the ointment may be used to prevent bacterial contamination in burns, skin grafts, incisions, and other clean lesions. For abrasions, minor cuts and wounds accidentally incurred, its use may prevent the development of infection and permit wound healing. **CONTRAINDICATIONS:** Not for use in the eyes or external ear canal if the eardrum is perforated. This product is contraindicated in those individuals who have shown hypersensitivity to any of the components. **WARNING:** Because of the potential hazard of nephrotoxicity and ototoxicity due to neomycin, care should be exercised when using this product in treating ex isive burns, trophic ulceration and other extensive conditions where absorp n of neomycin is possible. In burns where more than 20 percent of the body su ce is affected, especially if the patient has impaired renal function or is receivin other aminoglycoside antibiotics concurrently, not more than one application a ay is recommended. **PRECAUTIONS:** As with other antibacterial preparations, pr nged use may result in overgrowth of nonsusceptible organisms, including ungi. Appropriate measures should be taken if this occurs. **ADVERSE REAC ONS:** Neomycin is a not uncommon cutaneous sensitizer. Articles in the curre tera ture indicate an increase in the prevalence of persons allergic to neomyc Oto toxicity and nephrotoxicity have been reported (see Warning section).

Complete literature available on request from Professional Services Dept. P .



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Editorial

"BAREFOOT DOCTORS": A BOOK REVIEW

Appearing elsewhere in this issue of the **Journal** is a paper describing ancient and modern medicine in China and attempts in the People's Republic to blend the two. Playing an important role in this endeavor are the barefoot doctors. For those who would know more of this fascinating subject, the publication by the National Institutes of Health a couple of years ago of a massive volume (960 pages) titled **A Barefoot Doctor's Manual** was a significant event.

The book, a translation from the Chinese, is divided into seven chapters titled: 1. Understanding the Human Body; 2. Hygiene; 3. Introduction to Diagnostic Techniques; 4. Therapeutic Techniques; 5. Birth Control Planning; 6. Diagnosis and Treatment of Common Diseases; and 7. Chinese Medicinal Plants.

Chapter 1 is divided into sections describing the anatomy and function of the various bodily systems such as Sensory, Skin, Nervous, Endocrine, Digestive, and Urinary. These descriptions are fairly conventional. For example, under circulation, after a description of the heart and vessels, the text continues: "This circulation is due chiefly to the regular contraction and relaxation of the heart. The heartbeat of a normal person ranges from 60 to 100 times a minute. During ventricular contraction (systole), great pressure is generated to force the blood into arteries and move the blood forward."

The goals of the Hygiene chapter are "to realize an effective Patriotic Health Movement" by emphasizing prevention, mobilizing the masses, and popularizing disease prevention. It discusses such matters as protection of the water supply, excreta management, food sanitation, and elimination of flies, lice, and other pests. The methods are sensible and described simply.

The chapter on diagnosis opens with a fairly conventional section on physical diagnosis. It then proceeds to a discussion of natural factors, such as the influences of climate, heat, and moisture, and eventually to a discourse on the ancient concepts of Yin and Yang. Yin illnesses are described as bodily deficient, cold, and internal. Symptoms are pale or light complexion, fatigue or drowsiness, and other negative characteristics. Yang ailments are "solid" (a complex of unrelated findings such as constipation), hot, and external. Some of its characteristics are a flushed face, warm body, restlessness and great thirst, among others. These concepts have no recognizable rationale to the Western mind.

Under Therapeutic Techniques are discussed treatment with Chinese herbs, and folk treatment, which embraces skin scraping, blood letting, cupping, massage (with graphic line drawings), and moxibustion (application of a flaming wick). Among New Therapeutic Techniques are New Acupuncture Therapy Techniques with a detailed description of acupuncture theory, acupuncture points, and methods. Under General

(Continued on Next Page)

Treatment Techniques are described modern methods of taking the temperature, checking the blood pressure, application of warm and cold compresses, injections (subcutaneous, intramuscular, and intravenous), local anaesthesia, incisions, suturing, and dressings, nasal feedings, gastric lavage, enemas, catheterization, artificial respiration, cardiac massage, bacterial sterilization, and preventive inoculation.

A brief chapter on birth control contains sections on Promoting Late Marriage, Contraception, Sterilization, and New Methods for Delivery of the Unborn. A foreword states: "Birth control planning is a momentous measure of national import and interest. It uses the scientific method to suitably determine the timing and frequency of human reproduction." In addition to oral contraception methods it describes in detail the use of condoms, and mentions the diaphragm and loop as also being effective, although cautioning that they must be fitted for appropriate use. As for condoms, it advises washing and cleaning after use, "dry and check for breaks, dust with talc, wrap and put away for later use." It characterizes a concoction of Chinese herbs as "effective to a certain extent." Regarding sterilization, both vasectomy and tubal ligation are described, although again Chinese herbs are mentioned as "of certain value." The section on delivery is simple and straightforward and describes assisted delivery illustrated with graphic simple line drawings. There are directions for checking the blood pressure, the fetal heartbeat, antisepsis (soap and water, followed by lysol), and the use of gloves.

In the section on Diagnosis and Treatment of Common Diseases there are lucid and simple descriptions for saving the dying and injured, control of hemorrhage, bandaging, immobilization and splinting of fractures, transport, burns, and many other acute problems. This is a long chapter of 370 pages. In the differential diagnosis of chest pain are mentioned fractured ribs, intercostal neuritis, herpes zoster, pneumothorax, pleurisy, pneumonia, lung ulcers, tuberculosis, lung cancer, angina, pericarditis, and myocardial infarction—a fairly complete list. Among the treatments mentioned are "new" acupuncture, massage, Chinese herbs (in great detail), but finally "immediate hospitalization" if myocardial infarction or pneumothorax are suspected. Acute cholecystitis and cholelithiasis are illustrated by a line drawing showing the ducts, gall bladder, pancreas, pancreatic duct, and duodenum. For prevention of attacks, cutting down on greasy foods" is advised, and an "easily digested" diet. The patient is placed in a semi-recumbent position and given liquid nourishment. For the seriously ill, parenteral fluids (so designated) are advised. "New" acupuncture is mentioned, and Chinese herbs are covered in some detail. A section on Western medicines recommends antispasmodics and analgesics (magnesium sulfate, atropine, and morphine), vitamin K by injection if jaundice is present, and antibacterials (penicillin and streptomycin; or tetracyclines — by intravenous use where necessary). If these treatments are "to no avail," "early and timely surgical intervention" is recommended.

It is striking that the final chapter, comprising 410 of the 960 pages, is devoted **entirely** to a description of Chinese medicinal plants, one plant to a page. A brief introductory section (19 pages) contains a simple botanical text using conventional terminology, description of processing techniques (e.g. sorting, washing, drying, storage), and a listing of General Properties, relating properties and tastes to the types of illness to be treated. Finally there is a brief account of General Dosage and Usage.

The description of each herb contains a line sketch of the growing plant, its Chinese name (the English equivalents have been included by the editors), its botanical family and scientific name in Latin, Chinese synonyms, morphology, properties and action (according to Chinese herbalist tradition), conditions for which it is efficacious, preparation, and dosage.

A typical example selected at random is Ch'i-yen Lien ("seven-leafed lotus"), family Araliaceae; scientific name **Scheffera arboricola Hyatta;** morphology: spreading evergreen shrub; properties and action: warm-natured; taste: bitter-sweet; relaxes muscles, activates sinews, reduces swelling, and relieves pain. The herb is prepared as a decoc-

tion of the stems and leaves for oral administration, or it may be applied as a poultice for rheumatoid arthralgia, trauma, and wound bleeding.

The introduction to the chapter on herbal medicine concludes with these words:

"In accordance with the continuing development of the mass movement stressing use of Chinese medicinal herbs to prevent and treat disease, the mass of workers, peasants and soldiers are cooperating with the barefoot physician to tear down superstitions, to experiment and create different dosage forms such as pills, tablets, powder, capsules, tinctures, syrups, ointments and injections from Chinese herbs, based on different plant properties and disease prevention and treatment needs. In this manner, they can effectively serve the new wave of industrial and agricultural production and national defense, while effectively stimulating the development of a combined practice of traditional Chinese and western medicine."

This fascinating volume reveals much about the effort in mainland China to blend ancient traditional medicine, modern Western practice, and ideology. Its publication by DHEW has been a valuable and worthwhile project.

REFERENCE

A Barefoot Doctor's Manual. (Translation of a Chinese Instruction to Certain Chinese Health Personnel.) Reproduced in Limited Quantities by the Geographic Health Studies Program of the John E. Fogarty International Center for Advanced Study in the Health Sciences, 1974, U.S. Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, DHEW Publication No. (NIH) 75-695.

SEEBERT J. GOLDOWSKY, M.D.

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Editor's Mailbox

EFFECT OF VARIABLES ON LOS

To The Editor:

Doctor Metcalf's astute observations on hospital utilization **(RI Med J,** Jan 77) serve to point out the further need to be extremely cautious when interpreting non-specific ALOS indicators for comparative purposes between geographic regions.

This perspective lends to intra-region comparisons across hospitals as well. Not only do there exist differences with regard to transfer/readmission rates, age, fertility, SES, hospital size, teaching status, and patient mix, etc., but these major utilization variables also have a significant impact on differences of ALOS **between** institutions within a given geographic region.

There is one common similarity of all hospitals — theey have **beds!** But that is just about where the similarities end and the differences begin. This is really not news to anyone. What may be news, however, is that while there may be widespread acknowledgement of this fact, there is still a large tendency to use and rely on raw ALOS figures (which assume a much wider hospital context and content homogeneity) for comparative purposes by some users.

Perhaps this is because there is a perceived lack of a better alternative due to state-of-the-art limitations on our abilities accurately to quantify known impacts on utilization behavior. Perhaps, however, it is because of an unwillingness to be free of an easy comfortable measure that has been around for years. Probably the real reason lies somewhere in between.

If so, we should and **can** begin to help ourselves in this effort by initiating a few simple steps:

1) Begin active support, development and use of **specific** length of stay (LOS) indicators which do not impute more than they really reflect (e.g. age specific, by sex specific, by case-mix specific LOS indicators).
2) Decrease, if not phase out, our tendency to rely on raw average length of stay (ALOS) measures by themselves for cross comparative purposes across institutions.
3) Develop and **use** ALOS measures which do account for variables we can measure, but just have not done so because the data are not collected or processed

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in a systematic manner (e.g., transfer/readmission rates, days lost in placement, etc.).

4) View LOS measures only in the context of the two flexible variables which constitute it: patient days and discharges. Doctor Metcalf's suggestion of D/1000 (discharges per 1000 total population base) and d/1000 (days per 1000 population base) as appropriate and necessary adjuncts to any LOS review is a start in the right direction. A further step will be the development and use of such measures which are specific to the service area population of the hospital.

Given the existing situation in Rhode Island with regard to the consortium structure for data collection and pooled resources for technical assistance, these efforts and opportunities are not that difficult. All that is required is the cooperation of those who generate the data and those who use it.

MICHAEL J. FAULKNER
Director
Organizational Services

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PHYSICIANS SEEKING OPPORTUNITIES

(Continued from Page 62)

Hari K. Bhasin, M.D.
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Specialty: Pediatrics and General Practice

* * *

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Specialty: Ophthalmology

Oscar Glieberman, M.D.
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Southfield, MI 48075
Specialty: Internal Medicine

* * *

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* * *

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Bronx, NY 10467
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* * *

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Specialty: General Surgery

* * *

Reports Of The House Of Delegates

Meeting October 6, 1976

A meeting of the House of Delegates of the Rhode Island Medical Society was held on October 6, 1976 in the Rhode Island Medical Society auditorium. The meeting was called to order by the Speaker of the House, Doctor Leonard S. Staudinger, at 8:05 p.m.

Delegates in attendance were: Doctors Peter Baute, Joseph R. Peltier, H. Gerald Rock, George Lewis, Charles P. Shoemaker, Juan Medina, David E. Hallmann, Paul J. M. Healey, Richard Kuhn, Paul B. Metcalf, substituting for Nathan Sonkin, Richard Kraemer, Erwin Siegmund, Leonard S. Staudinger, Herbert F. Hager, Frank W. Sullivan, Stephen J. Hoye, Charles Ashworth, Alphonse R. Cardi, Joseph E. Caruolo, George V. Coleman, George N. Cooper, Dominic L. Coppolino, John A. Dillon, Donald P. Fitzpatrick, Melvyn M. Gelch, Milton W. Hamolsky, Charles L. Hill, William Klutz, Henry M. Litchman, Vincent I. MacAndrew, William J. MacDonald, Peter L. Mathieu, Jr., Thomas R. Littleton substituting for H. Raymond McKendall, Daniel Moore, Jr., Raul Nodarse, P. Joseph Pesare, Ralph F. Pike, James A. Reeves, Guy A. Settipane, Richard P. Sexton, Hugo Taussig, Wilson F. Utter, Seebert J. Goldowsky, and John J. Cunningham.

Delegates absent were: Doctors David Newhall, Edward Asprinio, Jacobo J. Fijman, William Varr, Oswaldo R. Velis, Richard Zuerner, Robert Burroughs, Nathan Sonkin (excused), James McGrath, Louis Morrone, Patrick A. Levesque, Francis L. Scarpaci, John E. Carey, Charles B. Round (excused), Orlando M. Armada, Paul Calabresi (excused), George E. Charon, Frank G. DeLuca, John E. Farley, Jr., Serafino Garella, Melvin D. Hoffman, Robert Indeglia, Joseph P. Lombardozzi, Joseph B. May, H. Raymond McKendall (excused), Henry Robidoux, William Q. Sturner, Richard L. Testa and Joseph E. Cannon.

Commissioners in attendance were: Doctors Donald P. Fitzpatrick, Joseph E. Caruolo and Leonard S. Staudinger.

Commissioners absent were: Doctors Kenneth Liffmann and Melvin D. Hoffman.

Specialty Society Representatives in attendance were: Doctors Kenneth Nanian, Howard S. Browne, Louis V. Sorrentino, William F. Varr, Guy A. Settipane, Charles L. Hill, Joseph E. Caruolo, Walter Cotter and Wilson Utter.

Specialty Society Representatives absent were: Doctors Marshall Taylor, James B. Leach, Charles E. Millard, Richard Peters, Louis Fragola, Arthur I. Geltzer, and David M. Barry.

Also present were: Jim Clarkin and Tim Norbeck.

Approval of Minutes of Previous Meeting

The Speaker noted that the minutes of the March meeting of the House of Delegates had been printed and distributed by the Secretary.

Action: A motion was made, seconded and voted that the minutes of the March 10, 1976 meeting of the House of Delegates be approved as presented.

A Moment of Silence

The Speaker asked the delegates to rise for a silent prayer in memory and recognition of Doctor Thomas F. Head, former Speaker and President-Elect of the Rhode Island Medical Society, who died tragically during the summer.

Report of the Secretary

The Speaker noted that the Secretary's report was included in the handbook. Action was taken on the following item:

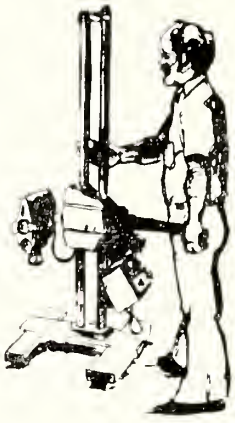
19. President Hager discussed Public Law 93-641 and the Statewide Health Coordinating Council (SHCC) which will soon

(Continued on Page 99)

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HOUSE OF DELEGATES REPORTS

(Continued from Page 97)

be formed in Rhode Island.

Action: A motion was made, seconded and voted to add the name of Doctor Paul B. Metcalf to the list of physician nominees which had been prepared by the Council.

Action: A motion was made, seconded and voted that the report of the Secretary, as a whole, be approved and placed on record.

Report of the Treasurer

Doctor Frank W. Sullivan noted that his report was included in the handbook. He noted that the newly formed Ad Hoc Committee on Budget and Finance had convened on the previous evening and was endeavoring to develop a five-year financial plan.

Action: A motion was made, seconded and voted that the report of the Treasurer as a whole, be received and placed on file subject to audit.

Recommendations from the Council

In the Secretary's absence, the Speaker presented recommendations from the Council which resulted in the following actions:

1. **Benevolence Fund Trustee**

The House elected Doctor Meyer Saklad for a three-year term, until 1979, as a trustee of the Benevolence Fund.

Doctor Melvyn M. Gelch, a trustee of the Fund, mentioned to the House that the Benevolence Fund was currently assisting three widows and one physician, and he urged the delegates to support its efforts through their contributions.

2. **AMA Delegate and Alternate Delegate**

The House elected Doctor John J. Cunningham, of Pawtucket, as Delegate and Doctor Herbert F. Hager, of Providence, as Alternate Delegate for the term beginning January 1, 1977 through December 31, 1978.

3. **Budget and Dues for 1977**

The House approved the proposed budget for 1977 and voted that the annual dues remain at $175 for active members in practice for more than one year and $87.50 for those in their first year of practice.

4. **Blue Shield Board of Directors**

The House elected Doctor H. Gerald Rock to fill the vacancy on the Blue Shield Board of Directors caused by the death of Doctor Thomas F. Head.

5. **President-Elect and Treasurer of the Rhode Island Medical Society**

The House elected Doctor Frank W. Sullivan as President-Elect and Doctor Melyvn M. Gelch as Treasurer of the Rhode Island Medical Society.

6. **Ad Hoc Committee on Standards and Credentials**

After a discussion of the subject by President Hager, Doctor Howard S. Browne, Jr., Chairman of the Society's Continuing Medical Education Committee and Doctor Russell P. Hager, Chairman of the Ad Hoc Committee on Standards and Credentials, the House approved of the committee's report including the two actions taken as listed in the handbook.

7. **Amendments to Bylaws**

Action: A motion was made, seconded and voted that the House approve of the Bylaw revisions as submitted by the Council under Article III, VII and X, as follows:

a) Item B in Section 1, Article 3, on page 6 of the Bylaws was changed to Item D.

b) Item B was added to Section 1, Article 3 on page 6 of the Bylaws to read as follows: "Graduate physician members. Graduate physician members are those physicians who engage in full time approved graduate training programs."

c) Item C was added to Section 1, Article 3 on page 6 of the Bylaws to read as follows: C) Student physician members. Student physician members are those physicians who are actively engaged in training in approved medical schools.

d) All words in Section 2, Article 3 on page 6 of the Bylaws were deleted after the word "Council" which appears on line 8.

e) Section 3, Article 3 on page 6 of the Bylaws was changed to Section 5 and the words after Council on line 3 were deleted.

f) Section 4, Article 3 on pages 6 and 7 of the Bylaws was changed to Section 6 and it was specified that student physician members do not have the right to vote at meetings of the Society but are entitled to all other rights and privileges of the Society.

Section 6, Article 3 will now read as follows: "Rights of members. Members

(Continued on Next Page)

who are in good standing are entitled to all rights, benefits and privileges of this Society, including the right to register at sessions of the Society, to attend and participate in the general meetings of therein, to vote, to hold office, subject to the qualifications set by these rules and bylaws for particular offices, to serve on committees, to receive a copy of the Society's official publication as issued. Student physician members are entitled to the above with the exception of voting privileges at Society general meetings. When a member resigns or loses his membership in a component society or dies, he or his estate, as the case may be, forfeits all rights to share in the privileges and property of this Society. The only rights possessed by honorary members are to register at the sessions of the Society, to attend general meetings therein, to serve on committees, and to receive a copy of the Society's official publication as issued. Graduate physician members, student physician members and honorary members will be exempt from any special assessments."

g) Section 5, Article 3 on page 7 of the Bylaws was changed to Section 7.

h) Section 6, Article 3 on page 7 of the Bylaws was changed to read Section 8.

i) Section 2, Article 7, page 16 — after the word "President" line 8 the following is added: "the Speaker of the House of Delegates, and the Vice Speaker, except that the Commissioners, the Speaker and the Vice Speaker shall serve as non voting members."

j) Section 5, Article 10, page 20 amended as follows: "The Committee shall consist of twenty (20) members, etc."

An amendment was approved by the House in the form of the following motion, and will be added to the above Bylaw revisions for consideration at the Society's Annual Meeting on May 11, 1977:

Action: A motion was made, seconded and voted that: 1) student physicians and graduate physicians are authorized to canvass and organize themselves into separate groups subject to the approval of the Council; 2) the student physician organization and the graduate physician organization, so approved, will each be permitted to elect one delegate to the Rhode Island Medical Society House of Delegates.

Article VI — House of Delegates

Section 2. Composition

Change item (3) to item (5) and have item (3) read as follows: (3) one voting delegate representing the student physician members; and (4) one voting delegate representing the graduate physician members.

8. **Dues for Graduate and Student Physician Members**

The House approved the Council recommendation of $35 dues for graduate physician members and $15 for student physician members.

9. **Commissioner**

The House elected Doctor Anthony F. Merlino as a Commissioner of the Rhode Island Medical Society.

10. **Computerized Axial Thermographic Scanners**

With respect to a recent communication from Doctor Cannon of the Health Department asking for the Society's position relative to the general issue of acquisition and installation of CAT Scanners in Rhode Island, the House approved a motion which empowered President Hager to respond indicating the Society's desire to participate in the discussions while pointing out the need for CAT Scanners in the state.

Resolutions

Doctor Paul J. M. Healey, of Pawtucket, introduced a resolution pertaining to free standing ambulatory surgical units in Rhode Island. The House adopted the resolution, the Resolved portion of which reads: "RESOLVED, that the Rhode Island Medical Society endorses the concept of free standing ambulatory surgical units within the state of Rhode Island for the benefit of all of its citizens."

Report of the AMA Delegates

The Speaker pointed out that the report of the delegate and alternate delegate to the American Medical Association was included in the handbook. Doctor William J. MacDonald, delegate, apprised the House of the improvement in the AMA's financial condition over the past year and mentioned that its membership was growing and that young

physicians were being attracted to the organization.

Speaker Staudinger mentioned that Doctor MacDonald was making his last report to the House as AMA delegate inasmuch as he had notified the Council of his desire to retire in that capacity at the end of 1976.

Action: A motion was made, seconded and voted to extend the deep appreciation and gratitude of the House of Delegates to Doctor William J. MacDonald for his outstanding efforts as the Rhode Island Medical Society delegate to the American Medical Association.

Committee Reports (Written)

The Speaker noted that several of the committee reports were for information purposes only and did not require any special action taken by the House.

Action: A motion was made, seconded and voted that the Committee reports on Aging, Medical Aspects of Sports, Peer Review, Mediation, Perinatal and Drug Abuse be received and placed on record.

Committee Reports (Oral)

Doctor George V. Coleman, Chairman of the Cancer Committee, mentioned that his committee was participating in a radiation therapy program for Rhode Island and that information would be disseminated at a later date.

Doctor Frank G. DeLuca, Temporary Chairman of the Scientific Work and Annual Meeting Committee pointed out that his committee was in the process of making final arrangements for the Society's Annual Meeting which will be held on May 11, 1977.

Doctor Hugo Taussig, Chairman of the Mental Health Committee, commended the Society for its choice of Doctor Sullivan as President-Elect and pointed out that his committee supported the Drug Abuse Committee's interest in securing passage of the Disabled Physician Act in Rhode Island.

Miscellaneous Business

Doctor Raul Nodarse noted that he was concluding his service to the House of Delegates with this meeting and that he was delighted that student physicians and graduate physicians would be represented in the House of Delegates. He also expressed a desire that more physicians in family practice become delegates.

Action: A motion was made, seconded and voted to commend Doctor Raul Nodarse for his many years of service to the Rhode Island Medical Society House of Delegates.

Adjournment

The meeting was adjourned at 10:30 p.m.

Respectfully submitted,
CHARLES B. ROUND, M.D.
Secretary

Meeting January 26, 1977

A meeting of the House of Delegates of the Rhode Island Medical Society was held on January 26, 1977 in the Rhode Island Medical Society auditorium. The meeting was called to order by the Speaker of the House, Doctor Leonard S. Staudinger, at 2:10 p.m.

Delegates in attendance were: Doctors Robert G. Rosenberg, Louis V. Sorrentino, Wilma S. F. Rosen, Richard L. Testa, Robert W. Reimer, Joseph R. Tucci, Anthony F. Merlino, Joseph R. Peltier, George P. Lewis, Jr., Juan N. Medina, David R. Hallmann, Paul J. M. Healey, Richard E. Kuhn, Richard V. Kraemer, Erwin Siegmund, Leonard S. Staudinger, Herbert F. Hager, Frank W. Sullivan, Alphonse R. Cardi, Donald P. Fitzpatrick, Melvyn M. Gelch, Charles L. Hill, William J. MacDonald, Betty B. Mathieu, Daniel Moore, Jr., P. Joseph Pesare, Guy A. Settipane, Hugo Taussig, Richard Zuerner, Charles B. Round, John Coughlin, Frank G. DeLuca, John E. Farley, Jr., Serafino Garella, Melvin D. Hoffman, Jerry M. Kheradi, Maurice W. Laufer, Joseph P. Lombardozzi and Richard T. McDermott.

Delegates absent were: Doctors Oswaldo R. Velis, Richard P. Sexton, Robert S. Burroughs, Nathan Sonkin, Louis A. Morrone, Patrick A. Levesque, Francis L. Scarpaci, John E. Carey, Kenneth B. Nanian, Paul Calabresi, Robert A. Indeglia, H. Raymond McKendall (excused),

(Continued on Next Page)

Henry J. Robidoux, William Q. Sturner (excused), George N. Cooper, Peter B. Baute, Richard W. Perry, Alfred A. Arcand, H. Gerald Rock, W. A. Van Haaren, Charles P. Shoemaker, Fred Vohr, Jr., Eugene B. McKee, Stephen J. Hoye (excused), Charles J. Ashworth, Jr., Thomas G. Breslin (excused), Ermino Cardi (excused), and William S. Klutz (excused).

Commissioners in attendance were: Doctors Donald P. Fitzpatrick, Joseph E. Caruolo, Leonard S. Staudinger, and Melvin D. Hoffman.

Commissioner absent was: Doctor Kenneth Liffmann.

Members Ex Officio in attendance were: Doctors Seebert J. Goldowsky, John J. Cunningham, Herbert F. Hager, and William J. MacDonald.

Member Ex Officio absent was: Doctor Joseph E. Cannon.

Specialty Society Representatives in attendance were: Doctors Marshall A. Taylor, Louis V. Sorrentino, Guy A. Settipane, Charles L. Hill, Joseph E. Caruolo, James B. Leach, Eufrocino N. Beltran, and Arthur I. Geltzer.

Specialty Society Representatives absent were: Doctors Kenneth B. Nanian, Charles E. Millard, Richard Peters, Louis A. Fragola (excused), David M. Barry, Howard S. Browne, Jr., Wilson F. Utter, Hisashi Tamura, William F. Varr and Walter C. Cotter.

Also present were: Jim Clarkin and Tim Norbeck.

Approval of Minutes of Previous Meeting

The Speaker noted that the minutes of the October meeting of the House had been printed and distributed by the Secretary.

Action: A motion was made, seconded and voted that the minutes of the October 6, 1977 meeting of the House of Delegates be approved as presented.

Report of the Secretary

The Speaker noted that the report of the Secretary was included in the Handbook.

Action: A motion was made, seconded and voted that the report of the Secretary be approved and placed on record.

Report of the Treasurer

Doctor Melvyn M. Gelch noted that his re-

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port was included in the Handbook for the meeting.

Action: A motion was made, seconded and voted that the report of the Treasurer be received and placed on file.

Recommendation of the Council

Doctor Round read the recommendations from the Council as published in the handbook for the meeting. Action was taken on the following items:

1. **Spring Meeting of the House**

The House voted to adopt the recommendation of the Council for the next House meeting to be scheduled for March 9, 1977 at 2 p.m.

2. **Blue Shield Directors**

The House nominated Doctors Paul E. Barber, Paul J. M. Healey, H. Gerald Rock and Leonard S. Staudinger for three-year terms each as members of the Board of Directors of Blue Shield.

3. **Rhode Island Society of Nuclear Medicine**

The House voted to grant representation in the House of Delegates for the Rhode Island Society of Nuclear Medicine.

4. **Library Committee**

The House approved of the appointment of Doctor John C. Lathrop to the Library Committee.

5. **Medical Aspects of Sports Committee**

The House voted to grant the Medical Aspects of Sports Committee $250 in support of its Sports Conference scheduled for July 1977, and recommended that it attempt to secure the $250 balance from the Stride Foundation in Newport.

6. **Perinatal Committee**

The House voted to grant the Perinatal Committee $250 in support of its Seminar scheduled for 1977, and recommended that it attempt to secure the $250 balance from the Stride Foundation in Newport.

7. **Amendments to Bylaws**

The House voted to approve of the Bylaws changes as listed in the Handbook.

Election of Three Physicians to the Professional Advisory Committee of Blue Shield

The Speaker noted that the House was authorized under the Bylaws of Blue Shield to

(Continued on Next Page)

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elect three physicians to serve for one year on the Professional Advisory Committee of that organization. He noted that the physicians whose terms were expiring were Doctors J. Robert Bowen, Joseph DiMase and John P. Grady. The House voted to reelect them for another term.

Report of the Delegate and Alternate Delegate to the AMA

The Speaker noted that the report of the delegate and alternate delegate, Doctors William J. MacDonald and John J. Cunningham, respectively, were included in the handbook. Speaker Staudinger reminded the House that Doctor MacDonald had retired as the AMA delegate, and the delegates commended him again for the many years in which he represented the Rhode Island Medical Society so well in the AMA House of Delegates.

Benevolence Fund

The Speaker noted that the trustees of the Benevolence Fund had filed their 1976 financial report for the information of the House. Doctor Melvyn M. Gelch, trustee, expressed his personal appreciation for the many generous contributions from the membership.

Reports of Committees

The Speaker noted that there were several committee reports in the Handbook for the information of the delegates but none called for any specific action by the House. The House agreed to receive and place on record the following written reports:

Committee on Medical Economics
Committee on the Medical Aspects of Sports
Perinatal Committee
State Committee on Peer Review
Occupational Health Committee

Miscellaneous Business

President Hager mentioned that there were several items on which he wished to report:

1. **SEARCH Ambulatory Care Survey**

Doctor Hager reported on the voluntary survey which will be conducted in March and mentioned that the Council of the Rhode Island Medical Society had agreed to cooperate providing several changes were made to assure confidentiality.

2. **Radiation Therapy Program**

President Hager asked Doctor George Cole-

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man, Chairman of the Society's Cancer Committee, and Doctor David Hallmann to review the details of the Radiation Therapy Program of the Cancer Committee. They reported that an ongoing study had been initiated this past summer in an attempt to identify those individuals who received radiation therapy. After considerable discussion, it was decided to refer the matter to the Council so that it could determine what, if any, publicity efforts should be undertaken.

3. **Continuing Medical Education**

Doctor Hager reviewed for the House various Society activities relating to the CME provision in the recently enacted malpractice legislation. It was suggested that the Society consider sponsoring a CME Seminar in the fall of 1979 in order to help physicians fulfill any "last minute" CME requirements. Delegates also agreed that the Council consider at its next meeting some mechanism by which the medical staffs in the various Rhode Island hospitals can coordinate efforts to establish continuing medical education programs.

4. **Legislative Program for 1977**

President Hager reported on his attendance at a recent AMA sponsored conference on state health legislation. He mentioned that he had secured two AMA model bills which he believed warranted serious consideration by the Society. The first bill, relating to physician-patient confidentiality had been approved by the AMA House of Delegates and Doctor Hager suggested that legal counsel (Mr. Clapp) review it. He mentioned that the Council agreed that the Society should move ahead with plans to introduce such a bill into the RI General Assembly consistent with the advice of Attorney Charles Clapp, the Public Laws Committee and discussion with any other groups interested in the legislation.

Doctor Hager reported that the second model bill, pertaining to a Comprehensive Health Education Program in the Elementary and Secondary Schools, had been discussed by the Council which agreed should be introduced provided it meets with the approval of legal counsel and the Public Laws Committee. He mentioned that it had also been sug-

(Continued on Next Page)

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gested that the Society's legislative counsel be involved in the evaluation process.

President Hager discussed the generic drug legislation which passed the RI General Assembly in 1976 and mentioned that the Formulary Commission needed the assistance of a physician member. He pointed out that the Society had been requesting a physician representative for a considerable length of time and was confident that such a change would be enacted soon.

Doctor Hager pointed out that the Council discussed efforts to help members of the Board of Examiners in Medicine receive adequate reimbursement for the considerable amount of time expended in their important deliberations and responsibilities. He said that the $20 offered per day compared very unfavorably with the compensation available on other boards and was not commensurate with their responsibilities. Doctor Hager mentioned that the Council was in agreement that members of the Board of Examiners receive $75 per day and requested that the Executive Office draft a letter soliciting such support from the Director of the Department of Health.

President Hager discussed the subject of the "Definition of Death" and apprised the House that the RI General Assembly would ultimately decide the matter. He explained that hearings will be held and that Doctors Paul T. Welch and Michael E. Scala have done an admirable job in representing the Society at recent meetings and deliberations.

5. **Blue Cross Physician Members**

Doctor Hager pointed out that the House of Delegates would no longer have the prerogative of naming two physicians from the Blue Shield Board to the Blue Cross Board of Directors. The Blue Cross Board members selected from the Blue Shield Board will be nominated by the Nominating Committee of the Blue Shield Board.

Following discussion of the above five items, several delegates commented on the recent proliferation of free standing emergency rooms and expressed concern over a possible escalation of costs, etc. It was agreed to refer this matter to the Council for further discussion.

Resolutions

Two resolutions were introduced toward the end of the meeting. The first related to the establishment of a committee to hear grievances from patients and the public about the behavior of physicians. Doctor Hager explained that the appropriate mechanism for such complaints was already in place with the Mediation Committee and the newly formed Physicians Committee.

The second resolution recommended the creation of a committee to study the need for component medical societies in Rhode Island. It was agreed to refer the matter to the Council for discussion.

Adjournment

There being no further business the meeting was adjourned at 4:10 p.m.

Respectfully submitted,
CHARLES B. ROUND, M.D.
Secretary



ONE SENTENCE ESSAYS

There is one very nifty thing about dead peoplel — they can't say no.
. . . John Guare, playwright

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. . . Lord Melbourne, British Prime Minister.

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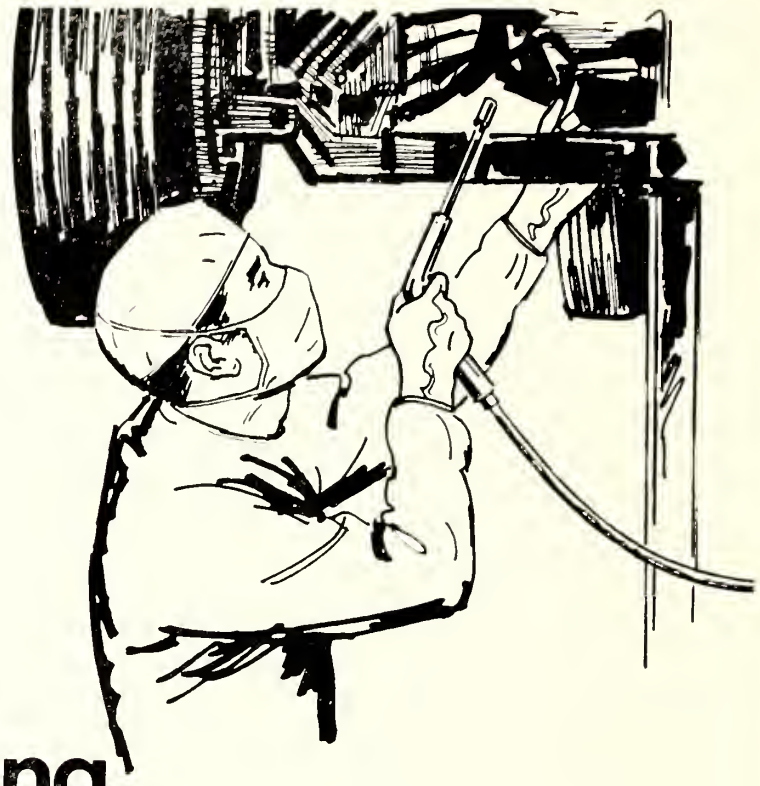
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(Continued from Page 79)

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(Continued from Page 82)

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CONCLUSION

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(Continued on Page 114)

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(Continued from Page 112)
incorporating are many. Some of the more select pros and cons have been submitted here to stimulate further discussion with physicians' personal advisers.

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CHINESE MEDICINE

(Continued from Page 88)

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In 1883 the Homeopathist, Doctor Weihe, professed to have discovered 195 points in close affinity with the viscera, quite similar to acupuncture points. Ten years later the British neurologist, Sir Henry Head, observed that patients suffering from gall bladder or renal attacks did not necessarily have pains in the afflicted organs, but were referred to certain and clearly definable areas of the skin. Even simple massage of these areas proved surprisingly beneficial

In November 1941 the **Journal of the American Medical Association** published a paper by Doctors Emery Andrew Rovenstine and Hippolyte Marens Wertheim on what was then considered a revolutionary new kind of anesthesia, called "therapeutic nerve bloc." A half dozen years later popular magazines published articles on the remarkable relief of pain from nerve block anesthesia. **Life** and the **New Yorker** magazines published extensive articles with pictures showing how nerve block acted to shut off pain impulses.

Interest in acupuncture was revived when our surgeons recently visited China and witnessed major surgery, such as chest and open heart operations, performed under acupuncture with the decided advantage that the patient was wide awake, and seemingly without the problems of post-operative shock. It aroused such intense interest that on their return hospitals sought qualified acupuncturists avidly, but found the supply limited. Many suffering from illnesses for which modern medicine could only offer palliative relief, such as incurable cancer, rheumatism, migraine, blood dyscrasias, and similar ailments, flocked to Chinese ex-waiters who professed a knowledge of acupuncture.

Years of study are required to become adept at this specialty. The student practices on a bronze model covered with wax, and in due time acquires the skill to locate these numerous sites with surprising accuracy.

While we tend to look upon certain aspects of Chinese medicine as primitive, we should remember the butchery that passed as surgery on the battlefields during and since the Middle Ages, extending up to our Civil War. Injured limbs were invariably amputated. Surgical repairs were rarely attempted.

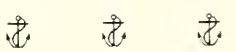
During the same period Chinese army surgeons performed quite advanced surgery and used a medicinal agent called "paiyo" that was found to be extremely efficient in stopping bleeding, healing wounds, and facilitating the growth of cell tissues. Although, as with acupuncture, they were unablel to understand how the preparation worked, they were able to see tangible results.

RENEWED INTEREST IN CHINESE MEDICINE

With renewed interest in acupuncture, Chinese traditional medicine began to be studied more seriously. Americans in major cities flocked to Chinese herb shops which advertised these tonics and aphrodisiacs. Medical literature from the East, particularly from Hong Kong, began to flood the market.

Some of the preparations offered were found to contain dangerous drugs, while others contained drugs in excessive dosage. Some deaths resulted from their use. They are not sanctioned by the Federal Drug Administration.

Despite these misadventures Chinese medicine may in the future have much to offer the West.



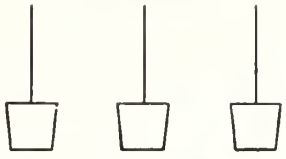
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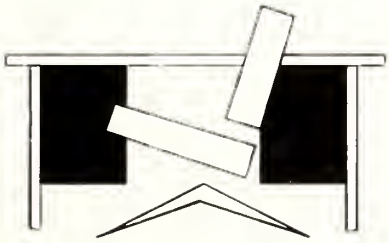
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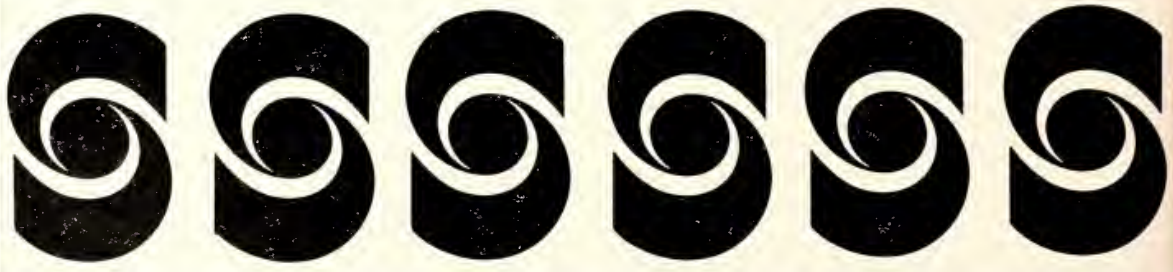
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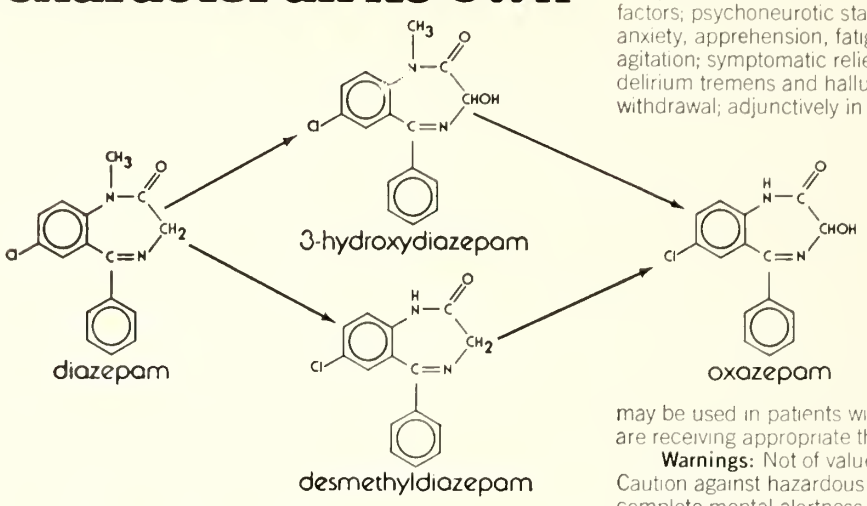
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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

Usage in Pregnancy: **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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CONTINUING MEDICAL EDUCATION CALENDAR

APRIL

15 "LESCH-NYHAN DISEASE: LESSONS IN GENETICS," Joseph Dancis, M.D., Professor and Chairman, Department of Pediatrics, New York University School of Medicine. Kay Auditorium, Roger Williams General Hospital, 10:30 A.M.

21 GROUND ROUNDS WITH ROBERT M. ZOLLINGER, M.D., Professor and Chairman, Department of Surgery, Emeritus, Ohio State University Medical School. Cases will be presented from the Surgical Services of the Miriam, Rhode Island, and Veterans Administration Hospitals. George Auditorium, Rhode Island Hospital, 3-5 P.M.

27 THE KIVEN ORATION: "CAN WE AFFORD CARDIOVASCULAR SURGERY," Theodore Cooper, M.D., Former Assistant Secretary of Health, Department of Health, Education and Welfare. Sopkin Auditorium, Miriam Hospital, 8:15-9:30 P.M.

29 "OPTIC NERVE SIGNS OF SYSTEMIC DISEASE," David Knox, M.D., Professor of Ophthalmology, Johns Hopkins University Medical School, and Chief, Pro-Tem, Department of Ophthalmology, Rhode Island Hospital. 7th floor conference room, A. P. C. Building, Rhode Island Hospital, 3:00 P.M.

MAY

10 THE SIMEONE LECTURE: "A PHYSICIAN'S REFLECTIONS CONCERNING THE END OF MEDICINE AND THE PURSUIT OF HEALTH," John C. Beck, M.D., Director, Clinical Scholars Program, The Robert Wood Johnson Foundation. Sopkin Auditorium, The Miriam Hospital, 8:15 P.M.

11 MEDICAL SOCIETY ANNUAL MEETING. Chapin Orator: Carl W. Walter, M.D. Cranston Hilton Inn, 1 P.M.

13 "DRINKING MOTHERS AND DEFECTIVE BABIES — STUDIES ON THE FETAL ALCOHOL SYNDROME," N. Paul Rosman, M.D., Professor of Pediatrics and Neurology, Boston University School of Medicine; Director of Pediatric Neurology, Boston City Hospital. Kay Auditorium, Roger Williams General Hospital, 10:30 A.M.

19-20 BUTLER SYMPOSIUM: "MARRIAGE AND THE TREATMENT OF MARITAL DISORDERS: PSYCHOANALYTIC, BEHAVIORAL AND SYSTEMS THEORY PERSPECTIVES." For information, contact Butler Hospital, 456-3750.

25-26 CURRENT CONCEPTS IN FETAL AND NEONATAL CARE. Third Annual Seminar of the Perinatal Committee of the Rhode Island Medical Society. The Marriott Inn. For information, contact Dr. William Oh, Women and Infants Hospital.

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A Message From The Dean

INTERNSHIPS OBTAINED BY BROWN UNIVERSITY MEDICAL STUDENTS, CLASS OF 1977

12,760 senior medical students about to graduate from the 115 medical schools of the United States have recently participated in a nationwide selection mechanism (National intern and Residents Matching Program) which assigns each matched applicant to an internship for the year beginning in July, 1977. As in previous years there has been considerable competition for the small number of posts situated in the more prestigious hospitals of the United States.

The results of this year's National Matching Program were distributed to all of the United States graduating medical students at 11:00 A.M. on March 14, 1977. The internship assignments for the 61 Brown medical seniors are summarized below:

CALIFORNIA (2)	
Stanford University Hospital	1
University of California Hospital, San Francisco	1
COLORADO (1)	
University of Colorado Hospital	1
CONNECTICUT (1)	
Yale-New Haven Medical Center	1
DISTRICT OF COLUMBIA (3)	
Georgetown University Hospital	1
Malcolm Grow U.S.A.F. Medical Center	1
Washington Hospital Center	1
HAWAII (1)	
Tripler Army Medical Center	1
ILLINOIS (4)	
Northwestern University Hospital	1
Presbyterian-St. Luke's Hospital	1
University of Chicago Hospitals	2
MARYLAND (1)	
Johns Hopkins Hospital	1
MASSACHUSETTS (7)	
Baystate Medical Center	1
Boston City Hospital	1
Boston University Hospitals	2
New England Deaconess Hospital	1
New England Medical Center	1
St. Elizabeth's Hospital	1
MICHIGAN (1)	
Henry Ford Hospital	1
MINNESOTA (1)	
University of Minnesota Hospital	1
MISSOURI (1)	
St. Louis Children's Hospital	1
NEW JERSEY (1)	
Overlook Hospital	1
NEW YORK (11)	
Albany Medical Center	2
Cornell-New York Hospital	2
Mt. Sinai Hospital	1
N.Y.U. Medical Center	1
St. Luke's Hospital	1
St. Joseph's Hospital	1
State University Hospital	2
University of Rochester Hospital	1
NORTH CAROLINA (1)	1
North Carolina Memorial Hospital	1
OHIO (2)	
Case-Western Reserve-Mt. Sinai Hospital	1
Ohio State University Hospital	1
PENNSYLVANIA (5)	
Hospital, University of Pennsylvania	2
Thomas Jefferson University Hospital	2
University of Pittsburgh-Montefiore Hospital	1
RHODE ISLAND (10)	
Memorial Hospital	2
Rhode Island Hospital	6
Roger Williams General Hospital	1
Women and Infants Hospital	1

(Continued on next page)

SOUTH CAROLINA (2)	
University of South Carolina Hospital	2
TEXAS (2)	
Baylor College Hospital	1
University of Texas Hospital, San Antonio	1
WASHINGTON (2)	
Madigan Army Medical Center	1
Sacred Heart Medical Center	1
WISCONSIN (2)	
Waukesha Memorial Hospital	1
Wisconsin University Hospital	1

There were increases in family medicine and surgery internships (see below) as compared with the assignments of students in the class of 1976. In the vicinity of two-thirds of Brown graduates continue to enter training for primary care medicine (i.e., internal medicine, family medicine, pediatrics).

	Class of		
Type of Internship	**1975**	**1976**	**1977**
Internal Medicine	27	33	24
Family Medicine	4	4	13
Surgery	10	5	13
Pediatrics	11	7	3
Obstetrics, Gynecology	2	3	2
Psychiatry	1	1	3
Pathology	1	1	2
Other	2	6	1

There is an increasing diversity in the number of states as well as the number of different hospital assignments obtained by our graduates. The 61 students in our most recent graduating class will be training in 20 different states and the District of Columbia.

	Class of		
	1975	**1976**	**1977**
Number of graduates	58	60	61
Internships; no. of States, D.C.	13	18	21
Internships; no. of hospitals	31	42	47

In a year characterized by increasing competition for internships at the university medical centers, the Brown students continue to be selected for many of the more eminent health care institutions of the United States. Indeed, every civilian internship was in a university-affiliated hospital and over half of our senior students were awarded their first choice for internships.

STANLEY M. ARONSON, M.D.
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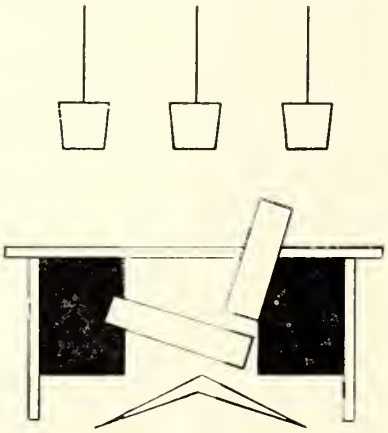
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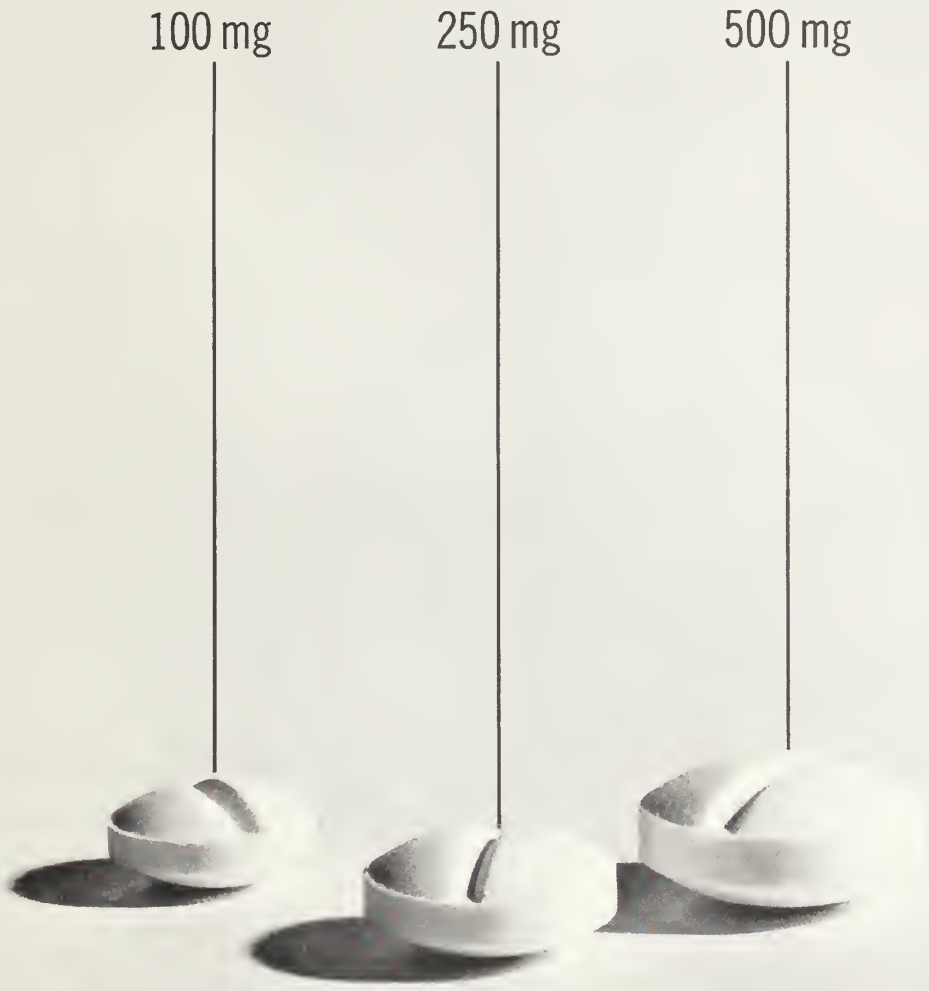
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Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

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Usage in Children: Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy: See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

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WEDNESDAY, MAY 11, 1977 (2-4 P.M.)

AT THE CRANSTON HILTON INN

Expert panelists will thoroughly explain the requirements and be available for questions.

As you know, continuing medical education credits are required on a triennial basis for relicensure. As of this date (mid-March) the regulations have not yet been formally approved and a public hearing was conducted on March 9 at which the Society testified. When the regulations become official, the Division of Professional Regulation will be notifying all physicians. In the meantime, the Rhode Island Medical Society has been busy in its attempts to define the credits and the learning experiences which qualify for them. By May 11, the regulations will be final and the Rhode Island Medical Society will be in a position to apprise its membership of all details through the panel discussion.

ATTENDEES WILL EARN CME CREDITS

Wed., May 11—Annual Meeting Agenda (All events at Cranston Hilton)

1:00 p.m.-2:00 p.m. — RIMS Business Meeting

2:00 p.m.-4:00 p.m. — CME Seminar

4:00 p.m.-5:00 p.m. — Chapin Oration by Dr. Carl W. Walter

6:00 p.m. — Cocktail Reception

7:00 p.m. — DINNER with address by Dr. John H. Budd
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Tuberculin Dual Testing: A New England Pilot Study

Technique Can Be Useful In Reducing Doubtful Interpretation To Less Than Two Per Cent Of Cases

By Ralph A. Redding, M.D., F.R.C.P. (C);
Francis Segarra, M.D., F.A.C.C.P.
Fredy Roland, M.D.

The specificity of the tuberculin skin testing method was challenged by Carol Palmer when mass surveys showed a progressive decrease of reactors to tuberculin at the dose of 5 tuberculin units (TU) and, paradoxically, an increase of positive reactors to the dose of 100 TU. He assumed that, particularly in the southwestern part of the United States, infection by an organism or organisms from the soil were infecting individuals without producing disease, but were inducing a low grade allergy, which was picked up as a "cross-reaction" by the tuberculin obtained from Mycobacterium tuberculosis of the human type. Palmer published his theory of "non-specific" allergy in 1950, before the discovery of the atypical mycobacterium.[1] The existence of certain atypical mycobacteria capable of infecting man has been known since Koch introduced his method of cultivating Mycobacterium tuberculosis, but the frequency of such infections was not suspected until the era of antibiotic therapy necessitated the isolation of organisms from individual patients in order to assess their susceptibility to various chemotherapeutic agents.[2] Diagnosis by culture rather than by smear revealed that nearly 3 per cent of clinical cases diagnosed as tuberculosis may be caused by various atypical mycobacteria.[3] The Battey bacillus, or type III of the Runyion classification, has been one of the most frequent offenders. In 1963 Edwards[4] reported her vast study of naval recruits who were tested with several antigens from atypical mycobacteria demonstrating beyond any doubt the phenomenon of "cross-reaction," as well as the prevalence of infection by atypical mycobacteria in the southeastern United States. Johnston and Smith[5] experimentally induced in guinea pigs a high degree of allergy to 5 TU doses of the different purified protein derivative (PPD) antigens, demonstrating once more both some specificity of the reaction for the corresponding antigen and the phenomenon of "cross-reaction."

The Battey bacillus antigen has been most frequently used in combination with tuberculin antigen. By using what is known as the

(Continued on next page)

RALPH A. REDDING, M.D., F.R.C.P.(C), *Associate professor of Medicine, University of Miami Medical School.*
FRANCIS SEGARRA, M.D., F.A.C.C.P., *former pulmonary fellow, Memorial Hospital, Pawtucket.*
FREDY ROLAND, M.D., *staff member at Memorial Hospital, Pawtucket.*

Rhode Island Med J 60(3):125-8, 1977

comparative or dual tuberculin testing technique, it is now possible to distinguish between specific reactions and "cross-reactions" to tuberculin.[6] To the best of our knowledge a survey with the dual tuberculin skin testing technique has never been performed before in New England.

MATERIALS AND METHODS

Within the Memorial Hospital of Pawtucket 1018 employees were tested, on a voluntary basis, with the two antigens PPD-S and PPD-B. The antigens were provided by the Center for Disease Control Laboratory, Atlanta, Georgia through the Rhode Island State Department of Health. The PPD-S contained Tween® 80 (so-called PPD-T) to avoid absorption phenomena with the well-known inaccuracies of antigen dosification, and at the strength of 5 TU. The Battey bacillus antigen was likewise administered in the same strength equivalent to the 5 TU Intradermal Mantoux. For both, a similar technique was used to place 0.1 ml of the PPD-S antigen in the right forearm and the same amount of PPD-B in the left forearm. The skin reactions were read at 48 hours, except in a few instances in which they were read at 72 hours. The performance of the test and the reading of the skin induration were carried out by two of the authors and a clinical nurse in charge of the hospital's employee clinic.

After the first hundred tests were done, independent readings were compared by the three professionals involved in the study. Four cases of minor disagreement were discussed, and suitable criteria were defined to improve uniformity, expediting the remainder of the study to be carried out by one observer, with occasional duplication of readings to monitor the continuity and preservation of the initial criteria throughout the entire investigation. Very few employees refused the procedure, and no untoward reactions from the tests were observed. The reactions from both antigens were read in two dimensions according to the degree of largest diameter induration as follows: negative 0-4 mm; doubtful 5-9 mm; positive 10 mm or more. The doubtful PPD-S, that is those with 5 mm to 9 mm induration, were further subdivided by considering also the PPD-B results. From the doubtful PPD-S group those individuals with negative PPD-B were redefined as positive PPD-S, while those with positive PPD-B reactions were reclassified as negative PPD-S, and finally those doubtful to both antigens remained doubtful. Similarly the group of doubtful PPD-B reactors were subdivided by considering also the PPD-S reaction utilizing the same criteria mentioned above.

RESULTS AND DISCUSSION

The characteristics of the population tested are summarized in Table I. Of 1018 subjects tested there was a predominance of females (77 per cent) over males (23 per cent). The vast majority were white (97 per cent), and persons under age 30 constituted more than half of the population tested. The remainder of the population were almost evenly distributed by decade until age 60.

TABLE I

Sex:	Female	783 (77%)	Male	235 (23%)
Race:	White	986 (97%)	Black	32 (3%)
Age:	<20 yrs.	312		
	20-29	358		
	30-29	99		
	40-49	110		
	50-59	101		
	60+	38		
	Total Population	1018		

The results of the PPD-S and the PPD-B reactions are depicted in Table 2A, while those results recategorized by the combined consideration of both reactions, PPD-S and PPD-B, are shown in Table 2B. Approximately 85 per cent of individuals were negative to both PPD-S or PPD-B (Table 2A) before redefinition. There were 4.4 per cent of PPD-S and 8.2 per cent of PPD-B reactions classified as doubtful. This left 10.9 per cent PPD-S and 6.3 per cent PPD-B positive reactors respectively. Upon using the "dual testing technique" previously mentioned, redistribution of the doubtful reactors according to the alternative skin reaction left less than 2 per cent of individuals in the doubtful category after reclassification (Table 2B). The reclassification process suggested that there were 132 positive PPD-S reactors (12.8 per cent) and 97 PPD-B reactors (9.2 per cent). About 75 per cent of individuals previously categorized as doubtful (particularly from the PPD-B reactions) could be reclassified upon considering the dual reactions to

PPD-S and PPD-B.

As might be expected, there was a higher incidence of positive PPD-S reactions among males (16.7 per cent) as compared to females (11.7 per cent). The sex difference was smaller among the positive PPD-B reactors (11.6 per cent male vs. 8.7 per cent female). The results, when arranged according to age (Table 3), revealed that there was a progressive increase of positive PPD-S reactions, from 1.3 per cent in those less than 20 years of age to a maximum of 45 per cent for those 60 years or older. In contrast to this, the incidence of positive reactions to PPD-B appeared to be higher at an earlier

(Continued on next page)

TABLE 2A

Results According Millimeters of Induration

	PPD-S		PPD-B	
Size	Subjects	%	Subjects	%
-5 mm.	862	84.7%	871	85.6%
5 mm.-9 mm.	45	4.4%	83	8.2%
10+mm.	111	10.9%	64	6.3%

TABLE 2B

Negative, Doubtful and Positive Results

	PPD-S		PPD-B	
	Subjects	%	Subjects	%
Negative	871	85.6%	908	89.2%
Doubtful	16	1.6%	16	1.6%
Positive	131	12.8%	94	9.2%

TABLE 3

Results According to Age

Age	Total Subjects	Test	Negative Subjects	%	Doubtful Subjects	%	Positive Subjects	%
Less than 20 years	312	PPD-S	305	97.7%	3	1 %	4	1.3%
		PPD-B	291	93.2%	3	1 %	18	5.8%
20-29	358	PPD-S	335	93.6%	4	1.1%	19	5.3%
		PPD-B	331	92.5%	4	1.1%	23	6.4%
30-39	99	PPD-S	83	83.8%	0	0	16	16.2%
		PPD-B	81	82. %	0	0	18	18. %
40-49	110	PPD-S	72	65.5%	3	2.7%	35	31.8%
		PPD-B	92	83.6%	3	2.7%	15	13.7%
50-59	101	PPD-S	56	55.4%	5	5 %	40	39.6%
		PPD-B	80	79.2%	5	5 %	16	15.8%
60+	38	PPD-S	20	52.6%	1	2.6%	17	44.8%
		PPD-B	32	84.2%	1	2.6%	5	13.2%

TABLE 4

Results According to Birthplace

Birthplace	Total Subjects* 995	Test	Negative Subjects	%	Doubtful Subjects	%	Positive Subjects	%
North East	899	PPD-S	791	88 %	11	1.2%	97	10.8%
		PPD-B	817	90.9%	11	1.2%	71	7.9%
South	19	PPD-S	17	89.5%	0	0	2	10.5%
		PPD-B	15	78.9%	0	0	4	21.1%
Midwest	28	PPD-S	21	75 %	1	3.6%	6	21.4%
		PPD-B	23	82 %	1	3.6%	4	14.4%
West	8	PPD-S	8	100 %	0	0	0	0
		PPD-B	8	100 %	0	0	0	0
Canada	8	PPD-S	3	37.5%	0	0	5	62.5%
		PPD-B	7	87.5%	0	0	1	12.5%
Europe	43	PPD-S	26	60.4%	3	7.1%	14	32.5%
		PPD-B	31	72.1%	3	7.1%	9	20.8%

*23 patients' origin was not determined

age (i.e. 6 per cent in those less than 20 years of age and 20 to 29 years of age), and varied between 13 per cent and 18 per cent from age 30 upwards.

Since most of the employees tested were white, it was not feasible to compare results with other races, except for a small group of 32 blacks (3 per cent of the population). The incidence of positive PPD-S results for whites and blacks were 12.3 per cent and 18.8 per cent respectively, and for the positive PPD-B 8.4 per cent and 28.1 per cent respectively.

Results of the tests were then recombined and correlated with the place of birth, using six general geographical regions: northeast, south, midwest, west, Canada, and Europe (Table 4). In some of the groups the number of individuals tabulated was too small to permit significant comparisons. Nevertheless, some trends were observed. It was noted that for the PPD-S reactors the highest incidence was among immigrants; in Canadians (usually of French extraction) the incidence was 62 per cent, all of them above age 40, while in Europeans it was 32 per cent. Among the American born, the highest incidence of positive results was observed in people from the midwest (21 per cent). In the northeast there were only 11 per cent positive reactors. With regard to the PPD-B reactions, the lowest incidence of positive results was obtained from New Englanders (8 per cent), while the highest positive incidence of positive reactors was among those from the southern states (21 per cent). It was noteworthy that there was a 12.5 per cent reaction rate among Canadians and a 28.0 per cent reaction rate among Europeans. The incidence of positive reactors in the New England area is less than the percentage cited for New England recruits tested by Edwards. The 21 per cent rate of positive PPD-B tests among southerners is also much smaller than that observed by Edwards. This difference can possibly be explained by the fact that most of these persons migrated from the south at an early age. The high incidence of PPD-B reactivity among the European immigrants is representative of a southern European population since most came from either Portugal or Italy. No definite trend in the incidence of positive reactors could be detected, either for the PPD-S or the PPD-B test according to various occupations within the hospital.

SUMMARY

At the Memorial Hospital in Pawtucket 1018 employees were simultaneously tested with two tuberculin antigens, PPD-S and PPD-B. Positive reactions in the population occurred in 10.9 per cent to PPD-S and 6.3 per cent to PPD-B, while 4.8 per cent and 8.2 per cent respectively were of doubtful induration. Over 75 per cent of the doubtful reactors could be reclassified as either negative or positive by considering both results utilizing the dual testing technique. Reclassification permitted individual detection of tuberculous and Battey bacillus infection in 12.8 per cent and 9.2 per cent of the cases respectively. To the best of our knowledge, this is the first reported study in New England of the "Dual Tuberculin testing technique."

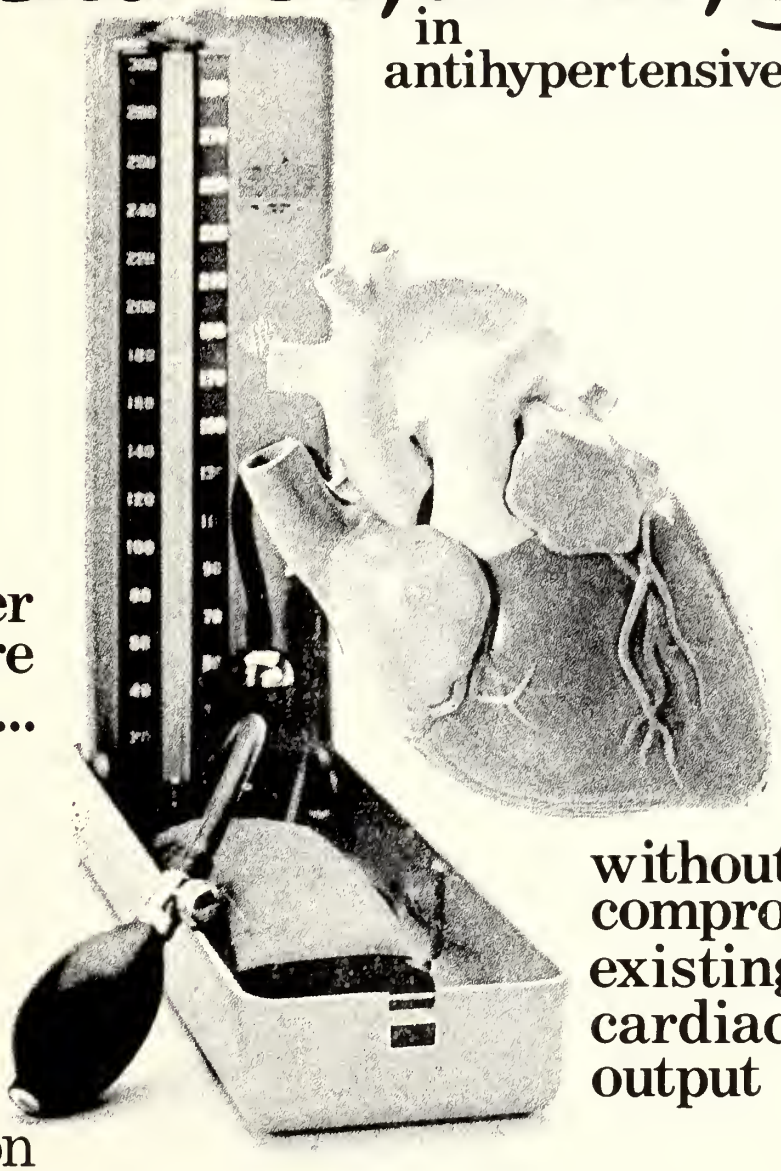
CONCLUSIONS

Several conclusions can be derived from this study: 1.) Even though the hospital personnel are not fully representative of the general population, the incidence of tuberculous infection appears to remain relatively high (13 per cent) in areas of New England. 2.) Battey bacillus infection in this geographical area is rather low, viz. about 8 per cent as compared with some other areas of the United States. 3.) There continues to be a higher incidence of positive reactors in males vs. females for both infections, whether tuberculous or the Battey bacillus infection. 4.) There continues to be a higher incidence in blacks vs. whites for both infections. 5.) There appears to be an earlier appearance of positive reactivity in the Battey bacillus infection in comparison to the tuberculous infection, but considering progression of the infection, a plateau is reached at age 30 for the former, while an uninterrupted increase in incidence of the infection is observed for the latter. 6.) The dual testing technique can be of great value for individual diagnostic problems, since, with the use of the PPD-B antigen in combination with the PPD-S, there is a marked reduction in doubt-

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Warnings: It is important to recognize that a positive Coombs test, hemolytic anemia, and liver disorders may occur with methyldopa therapy. The rare occurrences of hemolytic anemia or liver disorders could lead to potentially fatal complications unless properly recognized and managed. Read this section carefully to understand these reactions.

With prolonged methyldopa therapy, 10% to 20% of patients develop a positive direct Coombs test, usually between 6 and 12 months of therapy. Lowest incidence is at daily dosage of 1 g or less. This on rare occasions may be associated with hemolytic anemia, which could lead to potentially fatal complications. One cannot predict which patients with a positive direct Coombs test may develop hemolytic anemia. Prior existence or development of a positive direct Coombs test is not in itself a contraindication to use of methyldopa. If a positive Coombs test develops during methyldopa therapy, determine whether hemolytic anemia exists and whether the positive Coombs test may be a problem. For example, in addition to a positive direct Coombs test there is less often a positive indirect Coombs test which may interfere with cross matching of blood.

At the start of methyldopa therapy, it is desirable to do a blood count (hematocrit, hemoglobin, or red cell count) for a baseline or to establish whether there is anemia. Periodic blood counts should be done during therapy to detect hemolytic anemia. It may be useful to do a direct Coombs test before therapy and at 6 and 12 months after the start of therapy. If Coombs-positive hemolytic anemia occurs, the cause may be methyldopa and the drug should be discontinued. Usually the anemia remits promptly. If not, corticosteroids may be given and other causes of anemia should be considered. If the hemolytic anemia is related to methyldopa, the drug should not be reinstituted. When methyldopa causes Coombs positivity alone or with hemolytic anemia, the red cell is usually coated with gamma globulin of the IgG (gamma G) class only. The positive Coombs test may not revert to normal until weeks to months after methyldopa is stopped.

Should the need for transfusion arise in a patient receiving methyldopa, both a direct and an indirect Coombs test should be performed on his blood. In the absence of hemolytic anemia, usually only the direct Coombs test will be positive. A positive direct Coombs test alone will not interfere with typing or cross matching. If the indirect Coombs test is also positive, problems may arise in the major cross match and the assistance of a hematologist or transfusion expert will be needed.

Fever has occurred within first 3 weeks of therapy, sometimes with eosinophilia or abnormalities in liver function tests, such as serum alkaline phosphatase, serum transaminases (SGOT, SGPT), bilirubin, cephalin cholesterol flocculation, prothrombin time, and bromsulphalein retention. Jaundice, with or without fever, may occur, with onset usually in the first 2 to 3 months of therapy. In some patients the findings are consistent with those of cholestasis. Rarely fatal hepatic necrosis has been reported. These hepatic changes may represent hypersensitivity reactions; periodic determination of hepatic function should be done particularly during the first 6 to 12 weeks of therapy or whenever an unexplained fever occurs. If fever and abnormalities in liver function tests or jaundice appear, stop therapy with methyldopa. If caused by methyldopa, the temperature and abnormalities in liver function characteristically have reverted to normal when the drug was discontinued. Methyldopa should not be reinstituted in such patients.

Rarely, a reversible reduction of the white blood cell count with primary effect on granulocytes has been seen. Reversible thrombocytopenia has occurred rarely. When used with other antihypertensive drugs, potentiation of antihypertensive effect may occur. Patients should be followed carefully to detect side reactions or unusual manifestations of drug idiosyncrasy.

Use in Pregnancy: Use of any drug in women who are or may become pregnant requires that anticipated benefits be weighed against possible risks; possibility of fetal injury can not be excluded.

Precautions: Should be used with caution in patients with history of previous liver disease or dysfunction (see Warnings). May interfere with measurement of: uric acid by the phosphotungstate method, creatinine by the alkaline picrate method, and SGOT by colorimetric methods. Since methyldopa causes fluorescence in urine samples at the same wavelengths as catecholamines, falsely high levels of urinary catecholamines may be reported. This will interfere with the diagnosis of pheochromocytoma. It is important to recognize this phenomenon before a patient with a possible pheochromocytoma is subjected to surgery. Methyldopa is not recommended for patients with pheochromocytoma. Urine exposed to air after voiding may darken because of breakdown of methyldopa or its metabolites.

Stop drug if involuntary choreoathetotic mov occur in patients with severe bilateral cerebr lar disease. Patients may require reduced d anesthetics; hypotension occurring during thesia usually can be controlled with vasopr Hypertension has recurred after dialysis in on methyldopa because the drug is removed procedure.

Adverse Reactions: *Central nervous* Sedation, headache, asthenia or weakness, early and transient; dizziness, lightheadness symptoms of cerebrovascular insuff paresthesias, parkinsonism, Bell's palsy, de mental acuity, involuntary choreoathetotic ments; psychic disturbances, including nig and reversible mild psychoses or depressio

Cardiovascular: Bradycardia, aggravation o pectoris. Orthostatic hypotension (decrea dosage). Edema (and weight gain) usually by use of a diuretic. (Discontinue methy edema progresses or signs of heart failure

Gastrointestinal: Nausea, vomiting, distenti stipation, flatus, diarrhea, mild dryness of mo or "black" tongue, pancreatitis, sialadenitis.

Hepatic: Abnormal liver function tests, liver disorders.

Hematologic: Positive Coombs test, h anemia. Leukopenia, granulocytopenia, bocytopenia.

Allergic: Drug-related fever, myocarditis.

Other: Nasal stuffiness, rise in BUN, breast ment, gynecomastia, lactation, impotence, libido, dermatologic reactions including ecz lichenoid eruptions, mild arthralgia, myalgia.

Note: Initial adult dosage should be 500 mg daily when given with antihype other than thiazides. Tolerance may occu between second and third month of the creased dosage or adding a thiazide restores effective control. Patients with renal function may respond to smaller do cope in older patients may be related to sensitivity and advanced arteriosclerotic disease; this may be avoided by lower do

How Supplied: Tablets, containing methyldopa each, in bottles of 100; Tablets ing 250 mg methyldopa each, in s packages of 100 and bottles of 100 a Tablets, containing 500 mg methyldopa single-unit packages of 100 and bottles c

For more detailed information, consult representative or see full prescribing tion. Merck Sharp & Dohme, Division o Co., Inc., West Point, Pa. 19486 J6A

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Lithium As An Anti-Depressant: Discoveries Through Clinical Observations

Lithium Is A Relatively Safe And Effective Medication When Used Judiciously

By Peter P. Reilly, M.D.
Lauren B. Cohen, B.A.

Depression is the most frequent psychiatric diagnosis made today. It appears in many guises and in varied degrees of severity. In addition to those individuals diagnosed as endogenously depressed, there are incalculable numbers suffering from variously diagnosed disorders involving some organ systems, who are also biochemically depressed. Genetic and environmental factors have come under scrutiny of late; and the demonstration of changes in catechol and indole amines, especially norepinephrine and serotonin, have thrown more light on the subject recently.

With the heightened interest in the use of lithium in various types of affective disorders, some clinical observations on the use of lithium in the treatment of 39 depressed patients in my office practice may provide insights into the clinical management of biochemical (non-reactive, endogenous) depression. Endogenous depression is defined by Schildkraut as being characterized by "psychic retardation, decrease in interest and ambition, loss of initiative, impaired sense of vitality, the inability to participate in or attain the usual satisfactions or pleasures customarily obtained from work or recreational activities, and associated feelings of hopelessness, helplessness, worthlessness, and guilt. Sadness is often but not invariably present. It is not caused by a specific precipitant, and the autonomy of the depressive syndrome is not usually affected by alterations in the patients' environment or to social or therapeutic interpersonal interactions . . . Diurnal variations in the intenstiy of symptoms with worsening in the morning and partial remission later in the day."[1] Patients with endogenous depression usually present with combinations of other psychic and somatic symptoms. These include irritability, anorexia, underlying anger, difficulty in concentrating and focusing attention, and insomnia that produces fatigue (characterized by difficulty in getting to sleep, waking during the night, premature early waking, or combinations of these resulting in a lack of relief from sleep). Consequently, these patients are always tired and often spend

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much of their time in bed. Patients frequently complain of non-specific body aches and pains which persist. (Complete medical workups are usually negative.) Family backgrounds often reveal at least one blood relative with a similar type of depression.

In the early 19th century, lithium salts enjoyed a vogue for a variety of disorders, but they fell into disuse because of a lack of understanding of the mechanism of action with resultant improper use; and, consequently, there were many reports of lithium toxicity. Lithium use in modern psychiatric medicine was first reported by Cade, an Australian, who in 1949 observed that lithium carbonate produced a short period of lethargy and unresponsiveness to stimuli in guinea pigs. As a result, he developed the idea of using lithium in psychotic excitement and reported favorable response in manics with no hypnotic effect.[2] Later, Rice, in a trial with a mixed group of patients, found that lithium had a special sedative action on manics and produced a feeling of calm in schizo-affective schizophrenics.[3]

MECHANISM OF ACTION

Research studies in the last 10 years have sparked interest in the biochemical mechanism of action of lithium and its associated effects on mood. Russell Noyes in 1971 reported improvement in 41 per cent of 100 patients treated. He hypothesized that lithium may reduce intracellular sodium by competing with it or by altering membrane permeability, and thereby counteract the sodium shift observed to occur in depression.

Patients given lithium had elevated magnesium levels. Lithium may alter steroid levels or steroid excretion. Intracellular accumulation of lithium occurred in manics and to a lesser degree in depressives in contrast to about even distribution throughout the body in normal subjects.[4] Glen and Reading observed that, while manics have a low red blood cell sodium concentration, sodium transport is reduced in depressives. Depressives with elevated red blood cell sodium have significantly lower cell sodium on recovery. Lithium seems to be transported into some cells by the carrier system for potassium ion, but it is much less efficiently transported out and may compete in the mechanism for sodium ion.[5] Schildkraut[6] has said that norepinephrine turnover in the brain is increased with lithium administration, likely due to alterations in magnesium-dependent processes. With continued lithium salt administration an equilibrium is reached between extra- and intracellular lithium. While the final biochemical mechanisms are unclear, current knowledge permits the effective use of lithium when there is proper monitoring of the blood levels to prevent toxicity.

CLINICAL STUDIES

Since October of 1975, 39 patients ranging in age from 26 to 79 years, who have had varying levels of endogenous depression, were treated with lithium carbonate and then closely observed and studied. There was a female-male ratio of 2½:1. They had no history of manic affect. (Since lithium is the known choice of medication for the manic-depressive condition, patients with that condition are not included here.) Also, depressed patients with basically schizo-affective diagnosis for whom lithium has been found effective are not included here for the sake of uniformity. Many of the patients included here had previously been treated elsewhere or by me with various tricyclic antidepressants and anti-anxiety medications such as Diazepam® and other minor tranquilizers and some with major tranquilizers, all with at best fair results in the relief of depression. The latter types of medications were frequently used in conjunction with the lithium for varying periods of time in many cases for the relief of certain side effects from the lithium, for the treatment of agitation sometimes occurring with depression, and for other reasons which will be discussed and explored.[7] Of the 39 biochemically depressed patients treated with lithium, a significant number have reported feeling "calmer," "less irritable," "more like doing things"; "having more energy available"; and the relief of depressive equivalents and symptoms seems to coincide with the patients' subjective improvement.

ADMINISTRATION

While in manic-depression the initial dose is generally considered to be 600 mg three times daily; in endogenous depression the initial dose has to be individualized. Patients

are generally started on 300-600 mg at bedtime, increased over 2-7 days, in accordance with clinical effect and serum lithium levels. Serum lithium levels, given in milli-equivalents per liter (mEq/L), were obtained within 12 hours of the initial dose, then weekly for one month, then bimonthly for one month, and monthly thereafter. There is a normal range of 0.5-1.5 mEq/L for effective blood levels of lithium that has been established in the treatment of manic-depression. A level exceeding 2.0 mEq/L can lead to convulsions and death. Effective blood levels for endogenous depression have ranged in this study from 0.3-1.5 mEq/L. However, the level of effectiveness varies from patient to patient and in a particular patient from time to time.[8] The effective level may be altered by medications used concurrently with the lithium. Thus, each case requires careful assessment and reassessment using both clinical and laboratory criteria. Lithium carbonate was the choice of lithium salts used, as it is better tolerated and less likely to produce gastrointestinal disturbance than the citrate or the chloride.[9] Lithium carbonate is available in 300 mg tablets.

CONTRAINDICATIONS, SIDE EFFECTS, AND TOXICITY

When prescribing lithium, its potential toxic effects must be considered, so that frequent serum lithium levels must be obtained as described above. The principal toxic effects of lithium are on the kidney causing lesions in the distal convoluted tubules where there is a competition between lithium and sodium for reabsorption. The severity of intoxication is related to the degree of accumulation of lithium in the body. A decreased intake of sodium or loss of sodium via diuresis accelerates lithium accumulation and accentuates its toxic effects. Symptoms and signs of toxicity include anorexia, nausea, vomiting, diarrhea, thirst, ataxia, slurred speech, electro cardiographic EKG abnormalities, muscular weakness, convulsions, coma, and death. In some cases the EKG shows flattening of the T waves or sometimes an inversion. Visual and tactile hallucinations may occur, and electroencephalographic (EEG) abnormalities with increased voltage and frequencies of 6-7 cycles per second have been reported in toxicity.[10] Treatment consists of withholding the lithium salt and increased sodium intake via isotonic solution of sodium chloride to hasten excretion of the lithium salt.

Therefore, any condition which would cause a low serum sodium which is not correctable to the normal serum sodium range would have to be considered a contraindication for the use of lithium. The absolute contraindication would be advanced renal disease, while relative contraindications would be goitrogenic thyroid disease, Addison's disease, and any condition where diuretics are used. Lithium is also contraindicated for unreliable, unsupervised patients or patients with current suicidal ideation, unless they are hospitalized.

As observed in the Distribution of Side Effects chart (Table I), the most common

TABLE 1
Distribution of Side Effects* N=39

	No.
Lithium insomnia	20
Tremors	15
Rash	2
Nausea	19
Metabolic change (weight gain)	10
Blurred vision	3
Dry mouth	39
Gray discoloration of skin	1

side effects are nausea, insomnia, intention tremors, dry mouth, annd metabolic changes including a tendency to gain weight (especially in women). Dry mouth is an anticholinergic side-effect that was tolerable to nearly every patient. Nausea and intention tremors tended to disappear within 7-14 days if patients could tolerate them while administration of lithium continued. It was necessary to reassure patients who were receiving a good antidepressant effect to try to withstand these initial side effects. If they occurred later in treatment, a reduction of lithium dosage was necessary. Lithium insomnia occurred in roughly half of the patients, sometimes as an initial side-effect and sometimes as a transient side-effect. Unlike insomnia that is associated with depression, it did not result in fatigue and was characterized by a feeling of awakeness during "normal sleeping hours." It can be effectively treated with small doses of other medications. Other side-effects noticed include skin rashes, blurred vision, and, in one case, gray-

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ish skin. The latter was probably a pre-toxic side-effect. Side-effects are reversible with discontinuation of the lithium without withdrawal symptoms. Lithium is not addictive.

CASE HISTORIES

Case histories exemplify actual courses of lithium treatment.

Case 1. This is a 50 year old female with a history of depression for most of her life. She comes from a family of three depressives. Patient had been tried previously on appropriately high dosages of several tricyclic antidepressants, including Elavil® (amitriptyline) HCl and Norpramin® (desipramine hydrochloride) without appreciable change in the depressive element of her condition. Lithium was started with a dose of 600 mg, taken at bedtime, by mouth; the dose was increased over a 7-10 day period to 1200 mg (600 mg twice daily). Serum lithium levels ranged from 1.2 mEq/L to 1.6 mEq/L. The patient reported that she felt calmer, less irritable, and less fatigued after 7 days on lithium on 1200 mg daily. The side-effect of nausea developed during the first week, followed by intentional tremors which lasted for 2 days. This interfered with her ability to write (serum lithium at 0.8 mEq/L). During the next two months patient fared extremely well. After two months serious side-effects began to develop, such as a papular red lesion on her nose that lasted for one week, followed by a grayish tinge to her complexion (serum lithium 1.2 mEq/L). Lithium was then discontinued. However, during that treatment period the patient contended that lithium helped her depression more than any other medication, in that she was able to feel calm, less irritable, more alert, and much more interested in her activities. Within the next two months, while receiving 400 mg Norpramin® daily with fair results, the patient was asked to try lithium again, this time in conjunction with the Norpramin®. The Norpramin® and lithium combination is currently extremely effective. The lithium is being taken in a dosage of 600 mg daily, and the Norpramin® is gradually being decrreased until the lowest effective dosage is found.

Case 2. This is a 44 year old male with feelings of fatigue, difficulty in concentrating, insomnia, gastrointestinal dysfunction, frontal headaches, sadness and dizzy spells. Medical workup was normal including a computerized axial tomography. Past history revealed intermittent depressive episodes which were never incapacitating. The current depression had started 2 months earlier and was characterized by a withdrawal of patient's interest in his job and marriage. He had difficulty accepting the notion of a "mental problem" but was able to cooperate. He was placed on lithium 600 mg by mouth at bedtime, and after 48 hours he felt less sad and depressed with more energy. Insomnia was increased, a common finding in early lithium treatment. In 7 days the medication was increased in dosage to 900 mg at bedtime. (Serum lithium level was 0.5 mEq/L.) The 900 mg dosage has been maintained, and the frequency of serum lithium levels determinations has been reduced from weekly to monthly as patient is doing very well on lithium. For intermittent agitation Mellaril® (thioridazine) 10 mg at bedtime is effective. Lithium insomnia was reduced by Vivactil® (Protriptyline) 5 mg at bedtime. This was a case of dramatic improvement in a short period of time.

Case 3. This is a 40 year old female who has been maintained on lithium for over six months with monthly monitoring of serum lithium levels. Patient presented with a 20 year history of depression without a physical basis. Workup was negative. Elavil®, and Tofranil® (imipramine) combinations, as well as Norpramin®, were tried over a period of two months with poor results. Lithium 600 mg by mouth at bedtime was started. After the first three days the serum lithium was 0.4 mEq/L. The dosage was increased to 300 mg three times daily. During the next few days the following side-effects appeared: intention tremors which interfered with writing, nausea, insomnia, and a slight rash. All but insomnia subsided by 10 days (serum lithium was 1.0 mEq/L). Patient had already started to feel calmer and less depressed, and was better able to function. Within the next two weeks, the lithium was increased to 600 mg twice daily, but pre-toxic symptoms of ataxia and severe tremors developed (serum lithium level of 1.7 mEq/L). The dosage was lowered to 900 mg daily (lithium level reduced to 0.8 mEq/L), and further to 600

mg lithium daily at which dosage the tremors stopped completely (serum lithium levels 0.5-0.8 mEq L). Patient functions at her best on the 600 mg of lithium daily. For a transient lithium insomnia, Vivactil® 10 mg at bedtime is effective.

Case 4. This is a 40 year old female who presented with a history of fatigue, poor concentration, insomnia, anorexia alternating with excessive appetite, and lack of interest in all activities. She has been maintained on lithium for over six months with monthly monitoring of serum lithium levels. The anorexia nervosa was associated with a poor self-image and poor body image, amenorrhea, and an underlying endogenous depression. Both the anorexia nervosa and the depression responded to lithium, given 300 mg daily to start, increased to 900 mg by mouth over 7-10 days with serum lithium levels between 0.6-0.8 mEq/L. Within two weeks, the lithium dosage was increased to 1200 mg of lithium daily (600 mg twice daily with an attained serum lithium level of 1.05 mEq/L). Patient has gained 11.4 Kg (25 pounds) in weight. While anorexic, patient was painfully underweight. She is no longer clinically depressed and is able to go about her business. She is seen monthly to evaluate her mental status and to monitor lithium levels, which stay at approximately 0.65 mEq-0.9 mEq/L on 1200 mg daily. Trofanil® between 100-200 mg, at bedtime relieves her Lithium insomnia while providing an additional anti-depressant effect. This case is an example of a patient with a severe condition and previous polypharmacy habits and therefore many side-effects, who is able to function well on fewer medications and fewer side-effects.

Case 5. This is the case of a 37 year old male patient whom I had seen intermittently in the office and on consultation in the hospital with a proven diagnosis of regional ileitis and depression. With deepening depression the regional eleitis became exacerbated. Minimal changes in his depression were noted on tricyclic combinations. For instance, Elavil® in doses ranging from 400-500 mg daily combined with Norpramin® 200 mg daily produced mild positive change in his depression. During a recent hospitalization for ileitis, he was started on lithium, which was increased over 5-6 days to 1200 mg daily in divided doses of 600 mg twice daily. Serum lithium level averaged 0.8 mEq/L. Aside from transient nausea and intermittent lithium tremor, his depression dramatically remitted along with the ileitis. After he left the hospital he was seen several times in the office and then decided to terminate therapy.

DISCUSSION

These five case histories are representative of the variety of patients and courses of treatment referred to in this study. The lithium treatment prescribed for the 39 patients and the clinical results are outlined in Table 2. In 5 of 39 cases lithium alone was used. Two of these cases showed maximum improvement of depression; in one there was a moderate improvement, and in 2 there was marginal improvement. All 5 patients had been tried on other medications, principally tricyclic antidepressants, with no lessening of the depression. In 14 of the 39 cases lithium was used with very small doses of tricyclic antidepressants, so that the principal antidepressant agent was presumably the lithium. In this latter group the tricyclic antidepressants were used to reduce the lithium insomnia, (which may occur in the first 7-14 days of lithium treatment and then transiently) and to counteract initial nausea. In 9 out of 39 cases lithium was used to relieve the depression, while Mellaril® (thioridazine) or other antianxiety medication was prescribed for severe agitation and anxiety, and in some cases for the lithium insomnia. Anxiety and agitation often occur with endogenous depression. Of the Total of 28 cases in which lithium was the principal antidepressant, only one case showed no improvement.

In 11 cases lithium was used in conjunction with significant doses of tricyclic antidepressants, i.e., more than the equivalent of 100 mg of Elavil®, in a 24 hour period. In these cases tricyclics alone had been tried in doses of up to 300-400 mg (equivalent dose of Elavil®) with little or no lessening of the depressive process. When lithium was added to the tricyclics in this group, the improvement was marked, with 5 cases of maximum improvement, 5 cases of moderate improvement, and one case of mild improvement. These cases were all deeply depressed, and

(Continued on next page)



the goal has been gradually to decrease the dosage of the tricyclic being administered until the smallest effective dosage in combination with the lithium is reached.

I have not discussed the fact that in addition to the medication, all of these patients were also receiving psychotherapy. I know of no accurate method by which to ascertain in clinical practice the contribution of psychotherapy itself to the lessening or lifting of the depression when medication is being administered.

CONCLUSION

Lithium is a relatively safe and effective medication for endogenous depression when used judiciously. When used alone and as the principal antidepressant medication, it has been found to be a quickly acting, superior antidepressant; and, when used in combinations with tricyclics, it has greatly enhanced their antidepressant effects.

Where lithium has not been as effective, it is possible that lack of reliability on the part of the patient in taking the medication may have been a factor. It is therefore necessary to determine by blood level if the medication is being taken. Sometimes a patient will omit medication of his own volition because of inability to tolerate initial side-effects. Or perhaps the neurochemistry of some patients is interfered with by the lithium in an unproductive way.[11]

Research has not yet elucidated the exact mechanism of the lithium effect and how it might thus affect the neurochemical basis of depression. Better methods of monitoring intracellular lithium levels and of measuring norepinephrine and serotonin levels are needed. Questions to be answered are: "How is it that lithium can bring a manic 'down' and apparently lift the mood of a depressed person?" "Is lithium a balancing agent in the neurochemistry of the brain?" "Will lithium prevent the recurrence of further depressions?" and "Must lithium treatment be continued indefinitely for the patient with

TABLE 2

Lithium Treatment for Endogenous Depression

N=39

MEDICATION	No.	Improvement* a.	b.	c.	d.
LITHIUM — no additional medications	5	2	1	2	....
(Small dosage)					
Elavil® (Amitriptyline)	2	1	1	....	....
Norpramin® (Desipramine)	2	....	1	1	....
Vivactil® (Protriptyline)	3	3	....	....	....
Tofranil® (Imipramine)	2	....	2	....	....
Tofranil® — Elavil®	1	....	1	....	....
+Mellaril® (Thioridazine) — agitation, insomnia	7	4	2	....	1
+Librium® (Chlordiazepoxide HCl)	1	....	....	1	....
+Tranxene® (Chlorazepate Dipotassium)	1	....	1	....	....
+Mellaril — tricyclic (small dosage)					
+Elavil® — Tofranil®	1	1	....	....	....
+Vivactil®	3	1	1	1	....
Lithium — Principal Anti-depressant	28	12	10	5	1
LITHIUM — TRI-CYCLIC COMBINATION					
+Elavil®	4	1	3	....	....
+Tofranil®	1	1	....	....	....
+Norpramin®	2	1	1	....	....
+Tofranil® — Norpramin®	1	1	....	....	....
+Vivactil® — Elavil®	1	....	1	....	....
+Vivactil® with Mellaril® — for agitation	2	1	....	1	....
Lithium and tri-cyclic — equal dosage anti-depressants	11	5	5	1	....

*Improvement
a.=maximum improvement
b.=moderate improvement
c.=mild improvement
d.=no improvement



endogenous depression much as insulin must be maintained for the diabetic?" "Is there any connection between the phenomenon of lithium insomnia and research findings that sleep deprivation in controlled studies may have a beneficial effect on depressed patients?" "Who are the lithium responders and why?"

Lithium seems to have great therapeutic usefulness in the treatment of endogenous depression; and when we know why it does what it does, we shall be able to use it that much more effectively.

ACKNOWLEDGEMENT

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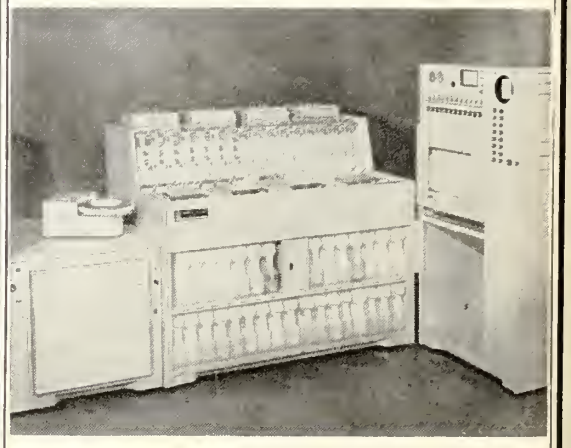
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Cost Containment And Quality Of Care: Are They Both Possible?

Old Dictum Of Greatest Good For The Greatest Number With Funds Available Is Still Valid

By James P. Cooney, Jr., Ph.D.

Homer in the Odyssey presents to Ulysses the twin perils of Scylla and Charybdis: the man-devouring monster and the ship-destroying whirlpool. The poet describes the danger of a movement too close to one to avoid the other, and the considerable skill required of the hero to steer the middle course between the two. Our assigned topic for this evening is a modern version of Scylla and Charybdis: cost containment and quality or care — are they both possible?

The question is, in a certain sense, rhetorical in that one answer is a glib and obvious "yes," if one assumes a finite quantity of money to be spent and a flexible definition of quality. One man's health can be another man's illness. The question in another sense can be an implicit mandate that both must be possible. Health care dollars and their resultant resources have become like our energy resources — scarce, and all prognostications seem to indicate increasingly short supply. A basic lesson taught in economics is that when meat is low-priced, people will buy more meat; however, when the price escalates, the consumer will substitute potatoes for meat in proportions commensurate with the escalating price. Quality of care is not a simplistic meat and potatoes situation, but we are in a time and will continue to be in a time where substitution of a less desirable item is a very real danger and presents a simplistic solution to many groups.

Just to maintain the same level of care tomorrow as we have today will cost more. Despite the presence of prepaid health care plans or health insurance, both governmental and nongovernmental, the consumer is paying out-of-pocket 62 cents of every health care dollar spent. Costs of health care plans are increasing under demands for increasing scope of benefits, increasing utilization, and general inflation. Because of our method of financing health care it is possible to shift the cost burdens from one pocket to the other, but only temporarily, and both pockets are in the same pair of pants (a distinction often overlooked). A limit will be reached and substitution will occur either (or both) by the

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Read before the Rhode Island Society of Internal Medicine, December 15, 1976.

JAMES P. COONEY, JR., Ph.D., *Chief Executive Officer, Rhode Island Health Services Research, Inc. (SEARCH), Providence, Rhode Island.*

provider of care being forced to curtail the available level, or the consumer's being forced by economic pressures to realign his personal priorities and expenditures.

We are all confronted with a very real problem and we each must contribute to the solution in a manner appropriate to our role. One of the best definitions of the physician's contribution as a group, from my perspective as a non-physician, appeared in an editorial in the November issue of **The Rhode Island Medical Journal:** "A critical look at everything we do in the professional care of patients for establishing need and true cost effectiveness in terms of patient benefit is the way we must go in controlling costs."

HEALTH CARE VS. MEDICAL CARE

The American Medical Association House of Delegates pointed out last summer in their Resolution 57 a difference between the concepts of **health** care and **medical** care:

"Whereas, Several departments of the Federal Government issue news releases concerning the cost and availability of 'health care' and 'medical care'; and

Whereas, The terms 'health care' and 'medical care' by and of themselves are misleading and not sufficiently specific; and

Whereas, The Department of Labor issues a 'consumer price' index which includes a 'medical care' component; and

Whereas, The 'medical care' component of the index contains ingredients which are in addition to physicians' services, i.e., 'semi-private room,' 'operating room charges,' 'dentists fees,' 'dispensing of eyeglasses,' 'routine laboratory tests,' 'prescriptions' and 'over-the-counter items,' etc.; and

Whereas, Because the government uses the broad term 'health care' and the specific term 'medical care,' consumers are confused and tend to place too much of the blame on physicians; and

Whereas, An acknowledged expert on health economics, Victor R. Fuchs, Ph.D., has stated in his recent book, 'Who Shall Live?,' that of every $100 spent for health care in the United States, only a bit over $20 goes for physicians' services; therefore be it

Resolved, That the American Medical Association request the several departments of the Federal Government that comment on 'health care' and 'medical care' to be more specific in the use of these terms, and to inform the public of the components that are included under these headings."

While there may be specific disagreement of words in the resolution and their implication, the general point is quite valid: health is an umbrella word and medical is but one component contained under it. Your concern as physicians is expressed to me as developing an equitable relationship between cost containment and quality of care within the medical sphere. The World Health Organization has defined health as "the full state of mental, physical, and social well-being." Health generally focuses on quality of life including among other things quality of medical care. While a physician can make a contribution obviously to an individual's quality of life, he cannot be held responsible for its totality.

Health care costs vs. medical care costs bear the same relationship, and semantically it is possible to define the relationship. However, in the confusion of today's concerns the distinction tends to become blurred, and health care cost escalation is frequently translated as medical care cost escalation. Communications and semantics perhaps can be improved, but I'm not sure that will help the particular concern of physicians relating to cost containment and quality. The health care dollar includes a medical care component, and the escalation of health care expenditures is serious and probably approaching the maximum tolerable limit. Containment measures have been implemented and we may see more. The medical care component is included in these measures, and, therefore, appropriate definition will not preclude a restriction of medical care dollars and potentially negative consequences to quality of care.

COST CONTAINMENT

Physicians and other groups more directly focused on medical rather than health care have taken cost containment steps with a consideration for quality of care. There have been effects resulting from these programs, and there is a need to continue them at a responsible level. Whether the individual cost containment programs in every possible loca-

tion throughout the country have been maximally and uniformly effective is a debatable question which I intend to avoid this evening. But experiments and programs continue to emerge, and **cooperative** efforts must continue. Given a defined and acceptable level of quality of care, how much more health care dollar expenditure can be saved by concentrating only on the physician and his resources within the medical care sphere? There are patterns of health behavior and health expenditures beyond the control of the physician but affecting the medical sphere. Physician programs relating quality and containment must continue, but we must also focus on other programs of change within the health arena. A productive focus here, while somewhat idealistic, could result in containment of health care cost escalation and perhaps preclude an undesirable impact on quality of medical care. This is the theme I will explore and I would like to explore it within the specific context of the Rhode Island environment.

RHODE ISLAND ENVIRONMENT

During the last half decade several events have occurred which affected Rhode Island's environment for health. These events included the severe local economic recession, the Navy pullout, the nature of the nation's economy, and changing attitudes towards the family and its size. All these events interacted very suddenly very early in the decade and have changed the characteristics of the Rhode Island population and its economic resources. The results of these changes appear to present a different set of medical needs and perhaps health than was perceived at the beginning of the decade.

Today, the state's population is slightly smaller and considerably older on the average than it was in 1970. This aging trend will most probably continue, all other things remaining stable. Therefore, our medical needs and our resource system have been adjusting and will have to continue to adjust in general from the more acute preventive oriented needs of a younger population to the more chronic supportive/custodial needs of an aging population. The needs of the population, however, are perhaps changing faster than the environment can respond to them, given existing resource constraints. These constraints are especially obvious in terms of fiscal and human resources. We are in a time of serious consideration of change in resource allocation, but we have less resources to support the reallocation; it is, therefore, imperative that we all contribute to the consideration of reallocation in manners appropriate to our role.

In addition to changes in the population per se, examinations of the two absolutes of life — natality and mortality — indicate that many encouraging changes have occurred in the potential health status of the population. However, this examination also indicates certain disquieting changes in the health arena many of which are beyond the available resources of **only** physicians to ameliorate, and involve issues of quality of life, consumer responsibility in the maintenance of his health, and total community resources in addition to medical.

The birth rate in Rhode Island over the last six years has decreased almost one-third, and the percentage of mothers 25-34 with a first live birth has increased by more than 50 per cent. The direction of both these Rhode Island statistics is reflected nationally and generally indicates the change in societal attitudes toward the family and perhaps the growing career orientation among women. However, there has been a more than 60 per cent increase in out-of-wedlock births, a large proportion of these births occurring in the under 20 age group. Growth in the percentage of out-of-wedlock births and especially those by mothers under 20 are indicators of resource needs more than just medical among a growing segment of the population. These needs require cooperative interaction of community resources including social, education, medical, and other health, if we are to preclude long-term life and economic problems that are generally the result of these situations. There has been a decrease of more than 10 per cent in low weight births (under 2500 grams). This statistic is perhaps an indication of successful cooperative efforts among health, medical, and educational resources.

DEATH RATES

Over the last half decade we have seen a slight decrease of four per cent in the state's

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overall death rate. This statistic has not been age adjusted, and, given the aging of the state's population, the decrease has probably been larger. Death rates from diabetes, major cardiovascular disease, influenza and pneumonia, bronchitis, emphysema, and asthma are all declining, some dramatically. These statistics, especially given an aging population, are indications that there are positive trends in the level of medical care and provide certain rough indications of quality.

Death rates from malignant neoplasms have increased slightly less than 10 per cent. This particular disease obviously has a very central medical dimension. However, there are additional community resources that can assist medicine in the detection, prevention, and rehabilitation from the disease. The formation and current efforts of the Rhode Island Cancer Control Board appear as a catalytic role in developing systematic and cooperative interrelations among the relevant groups in the community. If these efforts are sustained in a productive direction, the middle course between quality of care and cost containment, both long-term and short-term, associated with the disease could be realized. Despite the increase in the death rates from malignant neoplasms, the broad nature of that disease classification tends to obscure some positive developments not only in medical treatment, but also in the effectiveness of a preventive nature. Cervical cancer is cited as an example of this: during the last six years the absolute number of cervical cancer hospital discharges increased by over 60 per cent; however, the absolute number of deaths from that form of cancer decreased by 14 per cent. The clinical diagnosis of cervical cancer requires the services of the physician community.

PATIENT'S ROLE

However, it also requires the perceptive/educated potential patient to consult the physician. You can't diagnose that which is not presented to you. Your role here is reasonably well-defined in both quality and cost dimensions, but the potential patient **also** has a role, and other community resources in addition to medical must be called into play to assure that the highest number possible of potential patients are also perceptive/educated individuals. The Pap smear is a relatively low-cost, potentially accessible test for possible cervical cancer; breast self-examination is a no-cost, continuously accessible method for detection of a possible cancer. Both of these methods have generally received wide publicity and associated educational efforts; however, the use of these methods by women in the state is somewhat uneven. In 1975 the household health interview survey[1] found that:

—over two-thirds of Rhode Island women 25 years or older practice breast self-examination less than six times a year, AND 40 per cent had not practiced it at all during the past year;

—older women make considerably less use of breast self-examination and Pap tests than younger women even though the risk of breast and cervical cancer increases with age;

—women living in higher economic circumstances are more likely to practice breast self-examination and to have regular Pap tests than women in poorer households.

There are indications that the quality of medical care associated with this disease has improved. However, there are questions of whether the self-health behavior of the individual is not at as high a level as it could or should be. This individual health behavior can contribute to the problem of both health and medical costs by foregoing early detection with resultant consequences both to individual health and medical costs.

While there has been an increase in the death rates from malignant neoplasms, the magnitude of that increase is overshadowed by the rates of increase associated with cirrhosis of the liver (37 per cent) and suicides (41 per cent). Parenthetically, it should be noted that death rates from all types of accidents have decreased by seven per cent, a possible indication of improved safety standards, promotional campaigns, and the effectiveness of emergency medical services.

The importance of the individual to his/her own health care and the need for societal resources beyond simply medical are illustrated by the death rates associated with

[1]Conducted by Rhode Island Health Services Research, Inc. (SEARCH) and funded by the Rhode Island Department of Health.

alcoholism and the suicides. The overall rates have increased sharply, but the highest increase is in the 15-34 year old age group. Apart from the social implications of these statistics, there are economic consequences, as the deaths represent a loss to the community of potentially productive individuals who could at least contribute to the long-term economic resources of the community. The results of these related patterns of self-health can be extended beyond consideration of only health and medical costs.

Apart from deaths relatable to alcoholism, the treatment of the disease alone in this current year is estimated[2] to exceed 64½ million dollars, a figure in the neighborhood of 10 per cent of the total health expenditures within the state. Those resources potentially could be made available for reallocation.

HEALTH HABITS IN RHODE ISLAND

A recent study[3] was conducted of Rhode Islanders' health habits and attitudes. Included in the study instrument were questions concerning smoking, drinking, weight, exercise, and stress. Results indicated that the 30-39 year olds had a poorer health status than their age should indicate. In a value sense, their responses to the questions were significantly "poorer" than the age groups immediately below or above them. Earlier it was noted that the state's population is aging; the 30-39 year group had the largest proportional increase after the 65 and over group, and was only slightly smaller than that oldest group. Put the size of the 30-39 population together with their reported comparative health status. Consider their self-health practice is poor. This performance (or lack of performance) has a high degree of chance of moving from questionable health behavior to the need for medical care, and accompanying use of scarce dollar resources for that care.

Earlier this year the Director of the Department of Health stated, "If Rhode Islanders quit smoking, reduced alcohol consumption, lost weight, watched their diet, wore seat belts, relaxed and exercised, we would be a healthier state than if we doubled our 500 million dollar annual health expenditure, added 500 new doctors, or 1,000 additional hospital beds." I'm not sure of the actual cost-benefit of those figures, but I think it is evident that a significant drain on scarce health care dollars would be slowed with a change in individual health practices. If that could occur, the concerns about a negative impact of cost containment on the quality of care could become unnecessary. It is possible that savings from the improvement of individual health behavior would far exceed any possible savings from medical cost containment and do so without risk to **at least** an acceptable level of quality of care.

Unfortunately, individual health behavior in the state is at best not improving, and what might be is not what is. We do, therefore, have a very real problem of steering the middle course between cost containment and quality of care.

Cost containment and quality of care within the medical as opposed to the health context is probably best examined, at least on the surface, through indicators related to morbidity.

HOSPITAL DISCHARGE DATA

Examination of hospital discharge data by diagnostic category within the state over the past six years gives a possible indication of improved detection with perhaps positive long-term medical and cost containment consequences.

Over the last half decade the relative importance (rank order) of selected **broad** diagnostic categories has remained generally the same: diseases of the circulatory system consistently leading the list. The hospitalization rates for each diagnostic group have tended to increase over time with three exceptions: diseases of the respiratory system and of the blood-forming organs decreased, and there was a nominal increase (2 per cent) in infectious and parasitic diseases. As a result the overall hospitalization rate has increased 14 per cent, but reported causes of death from physical disease are generally down with the exceptions of malignant neoplasms and cirrhosis of the liver as previously noted.

(Continued on next page)

[2]All health expenditure estimates based on information from SEARCH's Health Expenditures Data System.

[3]The Rhode Island Health Habits Survey, 1976. Conducted by SEARCH and funded by Blue Cross/Blue Shield.

In addition to these data being possible indications of improved early detection, they also may indicate a positive influence of medical technology and cooperative efforts by medical staffs and third-party groups to assure appropriate utilization of resources. As possible support for this observation, a large general reduction in the average length of stay for almost all diagnostic categories is also noted, and a slight accompanying increase in the use of nursing home services post-hospitalization. A full examination of the effects of these patterns on the quality and cost of care is beyond our scope of time, but the possibilities should be implicitly obvious to you. Further evidence of appropriate utilization of institutional resources is implied through the comparison of length of stay and occupancy of community hospitals over the same time period. Occupancy fluctuated between 88 and 85 per cent over the period; the general trend was one of decrease. Length of stay decreased 11 per cent from 9.7 days to 8.7 days on the average; this average decrease would represent a major cost containment within the institutional sphere if there had been an absence of inflation. I am not aware of any expressed concerns about a negative impact of this pattern on quality of care.

It appears on the basis of the previous statistics and their interpretation (admittedly superficial) that you did manage to steer the middle course and achieve a degree of cost containment with no apparent sacrifice of quality. As you know, there are very strong advocates for cost containment and strong advocates for quality of care. Neither of these advocate types will admit to the legitimacy of the other's concern. From these advocates I'm sure there have been claims on the one hand that costs within your realm should have been contained more, and, from the other side, quality was not high enough. As sure as I am of the existence of these advocate positions, I am equally sure of the existence of a link group between the two that feels appropriate balance was achieved.

Assuming that balance between Scylla and Charybdis has been achieved, can it be maintained? Part of the answer to this lies in the area of existing and projected health care costs. These data imply how close we may be to a ceiling of expenditure, how much reallocation may be feasible, and how much threat is actually posed to at least existing levels of medical quality of care.

INCREASE IN EXPENDITURES

The rate of increase in health care expenditures in the last half decade both nationally and locally is alarming. In 1971 the total expenditure for health care in Rhode Island was almost 417 million dollars. Our estimate for 1975 is slightly more than 614 million dollars. This represents an average annual increase of more than 11 per cent. If this average rate of increase continues, we can expect to spend $1,000 per capita for personal health care by 1980 and to spend one billion dollars in total by 1981 **within the state.** Remember, it is estimated that the average direct consumer expenditure is slightly less than two-thirds of every health care dollar spent.

At present there are 10 service and supply categories within the health expenditure matrix: hospitals, physicians, dental, other health professionals, drugs and sundries, eyeglasses and appliances, nursing homes, prepayment and administration, government public health activities, and other health services. Hospital expenses account for approximately 45 per cent of the total, the largest single group. The next largest group is physician expenses at 16 per cent; drugs and sundries account for 13 per cent; the remaining components individually account for six per cent or less of total expenditure.

In terms of **annual increase** in expenditures the pattern is somewhat different. Government public health activities have increased at an average rate of 22 per cent a year, the largest single rate of increase. It should be remembered that these activities represent approximately only three per cent of the total. Given some of the data that had preceded increase in expenditures of this type, this may be most appropriate, since long-term cost benefits may result. Nursing home increases were the next largest category at 15 per cent. Given an aging population and the problems of nursing homes, the increase may be a positive sign. The third largest in-

(Continued on Page 167)

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FOR THE PATHOGENS

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*nonobstructed; due to susceptible organisms

Before prescribing, please consult complete product information, a summary of which follows:

Indications: In adults, urinary tract infections complicated by pain (primarily pyelonephritis, pyelitis and cystitis) due to susceptible organisms (usually *E. coli, Klebsiella-Aerobacter, Staphylococcus aureus, Proteus mirabilis,* and, less frequently, *Proteus vulgaris)* in the absence of obstructive uropathy or foreign bodies.

Note: Carefully coordinate *in vitro* sulfonamide sensitivity tests with bacteriologic and clinical response; add aminobenzoic acid to follow-up culture media. The increasing frequency of resistant organisms limits the usefulness of antibacterials including sulfonamides. Measure sulfonamide blood levels as variations may occur; 20 mg/100 ml should be maximum total level.

Contraindications: Children below age 12; sulfonamide hypersensitivity; pregnancy at term and during nursing period; because Azo Gantanol contains phenazopyridine hydrochloride it is contraindicated in glomerulonephritis, severe hepatitis, uremia, and pyelonephritis of pregnancy with G.I. disturbances.

Warnings: Safety during pregnancy not established. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been reported and early clinical signs (sore throat, fever, pallor, purpura or jaundice) may indicate serious blood disorders. Frequent CBC and urinalysis with microscopic examination are recommended during sulfonamide therapy.

Precautions: Use cautiously in patients with impaired renal or hepatic function, severe allergy, bronchial asthma; in glucose-6-phosphate dehydrogenase-deficient individuals in whom dose-related hemolysis may occur. Maintain adequate fluid intake to prevent crystalluria and stone formation.

Adverse Reactions: *Blood dyscrasias* (agranulocytosis, aplastic anemia, thrombocytopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia); *allergic reactions* (erythema multiforme, skin eruptions, Stevens-Johnson syndrome, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis); *G.I. reactions* (nausea, emesis, abdominal pains, hepatitis, diarrhea, anorexia, pancreatitis and stomatitis); *CNS reactions* (headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo and insomnia); *miscellaneous reactions* (drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L. E. phenomenon). Due to certain chemical similarities with some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia. Cross-sensitivity with these agents may exist.

Dosage: Azo Gantanol is intended for the acute, painful phase of urinary tract infections. *Usual adult dosage:* 2 Gm (4 tabs) initially, then 1 Gm (2 tabs) B.I.D. for up to 3 days. If pain persists, causes other than infection should be sought. After relief of pain has been obtained, continued treatment with Gantanol (sulfamethoxazole) may be considered.

NOTE: Patients should be told that the orange-red dye (phenazopyridine HCl) will color the urine.

Supplied: Tablets, red, film-coated, each containing 0.5 Gm sulfamethoxazole and 100 mg phenazopyridine HCl—bottles of 100 and 500.

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*fore prescribing, see complete prescribing information in SK&F Co. literature or PDR. A brief summary follows:

WARNING
This fixed combination drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual patient. If the fixed combination represents the dosage so determined, its use may be more convenient in patient management. The treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

***Indications:** When the fixed combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome. Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium-sparing action of its 'Dyrenium' component is warranted.

Contraindications: Further use in progressive renal or hepatic dysfunction; hyperkalemia. Preexisting elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs. Routine use of diuretics in otherwise healthy pregnancy.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in severely ill patients with urine volume less than one liter/day, the elderly or diabetics, with suspected or confirmed renal insufficiency. Periodic determinations of serum K^+ should be made. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **The presence of a widened QRS complex or arrhythmia in association with hyperkalemia requires prompt additional therapy.** Thiazides are reported to cross the placental barrier and appear in breast milk; fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and other adverse reactions that have occurred in the adult may result. When used in pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics, or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium® (triamterene, SK&F Co.), and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Do periodic blood studies in cirrhotics to check for nondrug-related variations in blood pictures, and in patients with folic acid depletion, since 'Dyrenium' may contribute to appearance of megaloblastosis. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

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Teachers And Teaching

Education Is Never Wasted Whether In The Liberal Arts Or In Mechanical And Agricultural Skills

By Rev. Joseph L. Lennon, O.P.

There is no greater stimulant to the advice gland of a pedagogue than to be invited to give a keynote speech at an educational convention. Here is a golden opportunity to air a few gripes, to "tell it like it is" to fellow teachers, to view with alarm, warn of dangerous academic trends, or point to ominous clouds on the educational horizon.

But talk is cheap! Perhaps that is why we have so much of it. Dale Carnegie assures us that "anyone may easily become a good speaker if he acquires the art of diluting a two-minute idea with a two-hour vocabulary." But if volubility and intelligence went together, back-fence gossipers would be veritable Einsteins. No less an authority than John Dewey states, "Long-windedness and glibness are quite compatible with moving round and round in a circle of moderate radius."

Keynote Address delivered at the Montana Education Association Convention in Billings, Montana on October 21, 1976.

REV. JOSEPH L. LENNON, O.P., *Vice President for Community Affairs at Providence College; Member, Board of Directors, Blue Shield of Rhode Island.*

Let me state at once that harsh things are being said about you teachers. By urging the de-schooling of America, Ivan Illich would make your job unnecessary. John Holt in his book "Instead of Education" goes so far as to indict you teachers for being criminals and mind-maimers who impose education on captive innocent children. Indeed, schools, in his view, are a form of slavery — a tyranny and atrocity against the human mind and spirit.

Acerbic remarks like these, remind me of the comment of that terrible-tempered newspaperman, H. L. Mencken, who said, "The average schoolmaster is and always must be essentially an ass, for how can one imagine an intelligent man engaging in so puerile an avocation?" That sounds like the jeering complaint of the children's sidewalk chant:

God made the bees,
The bees made honey;
We do the work,
The teacher gets the money.

Then there's the anecdote told of the old-timer who was reminiscing about his school days. He said: "When I was six years old, I started my formal education at a one teacher schoolhouse including several grades. The

(Continued on next page)

only thing I can remember from that first year at school is that one of the pupils knocked the teacher down with a book. Although I was perhaps not as bright as the average six-year-old, I knew that was no way to treat a book."

But, saner and more moderate critics are also voicing their concern. Evidence is mounting that the output of schools is not commensurate to the input, that despite the expenditure of more and more money, our schools, judged by almost any criterion, are teaching less and less, that there has been a dip in recent years in college board scores and in such basic skills as the ability to read, write, and solve simple mathematical problems. This parlous state is made glaringly clear in the Armbruster Study titled, "The United States Primary and Secondary Education Process."

GRADE INFLATION

Concomitant with this record of declining achievement, the nation's schools now have to cope with the problem of wholesale grade inflation. As and Bs are supplanting the Cs and Ds which were once the lot of the mythical average student. Why, if kids are doing more poorly, are grades getting better? Don't teachers and administrators give a damn anymore? Are they rebelling against the whole grading system? Or do they simply lack the guts to tell Johnny he's not as smart as he or his parents think he is? In any case, John Q. Public is not reluctant to let the teacher know what he thinks of him. In classroom performance, he grades the teacher F or puts him down with the minimal passing mark of D. Incidentally, the Armbruster study pulls no punches in ascribing low pupil achievement to teacher laziness, lack of classroom discipline, and the fad of relevance.

It's a basic American principle that every man should get just what's coming to him, and if teachers merit lumps for incompetence, then let them have it. But the current outcry against teachers smacks of scapegoating. Hounding the educators is a perennial recreation in which parents, politicians, and newspaper columnists like to have their merry fling. When things go snafu, Americans seldom beat their breasts and say "mea culpa." No, they are more likely to shrug their shoulders, exclaim, "Who me?", then look for a villain.

Youth are delinquent; youth are ignorant; youth are discourteous and rude. Who's at fault? Who else but teachers. They are bloodsuckers on the body politic, people with soft nine-month jobs who feel little or no obligation to the society that feeds them, who often breach the life of good citizens with a barrage of subversive ideas. What nonsense!

The truth is that educators do not have subversive ideas; indeed, they do not really have ideas at all. They are a channel for ideas of society, often hidden ideas which they carry into the flexible scholastic form. Teachers and school administrators are no more than the agents of a view of life to which our culture is deeply committed, and we cannot wipe out the agents without cleaning up the view of life.

If parents complain about ineffective teaching of reading, writing, and arithmetic, they engage in self-deception; for they hardly provide examples of devoted reading which might make young observers regard reading as a built-in human activity. If parents find public schools becoming trade schools, it is because trades are their real article of faith — a means for getting-on in the world that they really believe in. If parents find schools teaching adjustment rather than training minds, it is because they feel that getting-on in the group is better than developing one's own genius. Society will compel the schools to do those things which society wants, values, or feels that it needs.

INSTRUMENTS OF SOCIETY

It is not my purpose to whitewash teachers. What I wish to emphasize, however, is the fact that teachers are instruments of society, and reflect and interpret rather than originate the values and ideals society prizes. Still, agents are not guiltless. No one is compelled to become resigned to underachievement and mediocrity, and such resignation is more ignoble in a profession entrusted with a special role in the strengthening of society.

So flaying the educators may have some point, if it is understood as a preparation for, and a part of, a larger task of public self-examination of conscience about a second-

rate view of life that settles for the mean and the mediocre. If the public institutionalizes, and takes delight in **kitsch,** why should it decry the fact that the schools do not promote Culture with a capital C.

Again, because education has been my lifelong career, I cannot help worrying about a carping frame of mind which displays resentment against, indeed, shows disdain for those who run our schools and which is quick to brand teachers as charlatans and villains. It paints (smears) with too broad a brush and could readily lead to what logicians call the "Fallacy of the Imperfect Minister": the vulgar supposition that a flaw in the priest establishes the hollowness of the creed.

And Education has always been an American creed, indeed, a faith ranking just below belief in the Deity. Our people agree with Cicero's remark: "What greater gift can we offer the republic than to teach and instruct youth." We tend to identify schools with good citizenship. "Education makes a people easy to lead, but difficult to drive; easy to govern, but impossible to enslave," said Lord Brougham. And Thomas Jefferson flatly stated, "If a nation expects to be ignorant and free . . . it expects what never was and never will be."

Our forefathers from the early days of the republic accepted the principle that everyone should be able to go as far in his schooling as his talents permit. This is a great moral achievement. It would be a tragedy if a valid trust in the value of education were diminished because the public found teachers to be less than perfect.

Speaking of the value of education calls to mind the story of the farmer on the school board of a rural town who was resisting the request for a raise in salary for the teachers of its village school. "The work is easy," grumbled the farmer. "I don't imagine you people teach more than five or six hours a day."

"Sir," replied a faculty spokesman, "we teachers are a lot like one of your prize bulls. It's not the amount of time we spend. It's the importance of what we do."

Perhaps the virulence of the attack on teachers betrays a cryptic worship of the mystical and magical power of learning. The tendency to badmouth teachers and set them up as targets of public frustration will continue so long as our people overvalue schooling as the "open sesame" to all the good things of life. If Americans are convinced that education confers on the one to be educated the key to raising socio-economic status, to urbanity, largeness of mind, imaginative insight, and wisdom, then teacher performance will always be subject to exacting inspection and blunt inquiry. This intense interest is itself a left-handed compliment to the teaching profession.

But education, and excellence itself, is ill-served by foisting the defects and problems of the schools on wicked scapegoats and ill-favored rascals who can be polished off or easily cut down to size. The public may feel purged of guilt by pointing the finger at teachers, but this emotional catharsis does not absolve them of their share of responsibility for declining pupil accomplishment.

RESPONSIBILITY OF PARENTS

In the course of preparing this paper, I was edified and somewhat surprised to discover that nearly two-thirds of Americans surveyed in a recent Gallup Poll regarding attitudes toward the public schools felt that parents bear a major responsibility for the test score decline in the country's schools. Indeed, the pool points out that parents themselves seem willing to accept the blame, admitting that they have not provided enough attention, concern, and supervision of their children. Of course, they still hold schools in low esteem and are quite displeased with what is happening in the classrooms.

Since the public is fond of questioning teachers, perhaps it's about time teachers started questioning the public. One question teachers should ask before all others: What is a school for? What do you, the public, want it to do, and what can it rightfully be expected to do?

Because teachers have never asked this question of the public, the public uses education as a sort of trash can in which to dump all the odds and ends of social living.

Doesn't Johnny know how to wipe his nose? The teacher will show him. Is Johnny shy?

(Continued on next page)

School will take care of that. Is Susie too aggressive? The teacher will curb her tantrums. Can Jimmy dance? Let the school be his Arthur Murray. Should Joe learn to drive a car? Then let's have driving instruction. Is Fred a poor citizen? The teacher will cultivate his civic virtues. Is his body underdeveloped? School will make a man out of him.

The school becomes an omnium-gatherum of everything that needs doing and no one else wants to do. The demands become staggering. White House conferences on education, foundations encouraging educational research, governmental agencies and school departments provide detailed lists of educational objectives. Too frequently, these lists lose all contact with reality. They expect the teacher to be a scholar, a humanist, a social director, a psychiatrist, a coach, a prophet, a moral leader, an artist, an entertainer, a high priest, and a magician.

You may say in rebuttal that these are merely goals. Goals must often exceed a person's grasp, but everybody should aim as high as he can. Granted, but there is a vast difference between ambition and wishful thinking. Our goals should be high, but they must be in the realm of achievability; otherwise, we are living a fantasy life. And I strongly suggest that the present grab-bag idea of education is a neurotic fantasy.

Because the public requires teachers to equip the "total" child, they are attempting to do so at the cost of neglecting the one thing teachers do best, namely, teaching. When pupil performance suffers, we have scapegoating down the line. The colleges blame the high schools. The high schools blame the upper grades in the primary schools, the upper grades blame the intermediate grades and the intermediate grades blame the beginning grades — and I am sure the beginning grades complain that kindergartens aren't turning out the sort of children they used to.

This calls to mind a cartoon I saw recently in which a little boy says to his teacher as he is leaving the classroom: "You're afraid of the principal, the principal is afraid of the superintendent, the superintendent is afraid of the school board, the school board is afraid of the voters, but I'm not afraid of anybody!"

This infinite regression of responsibility is laughable, but it is also pathetic and more than a little ominous. I venture the opinion that everyone is mistaken in blaming the lower for what's wrong at the higher. The responsibility — as it does everywhere, in business or in government — rests squarely at the top. Let's blame the right people.

What do I mean by this? I mean that it is manifestly impossible to start at the lowest grades, because even by the age of five or six the child has already been imbued with an attitude toward life and is emotionally saturated with an atmosphere at home.

RESPECT FOR LEARNING

The place to check and reverse this terrible trend toward ignorance is not in the first grade but in the colleges and among young married adults generally. If our colleges inculcated in their students a decent respect for learning, these students on graduation and marriage would then begin to rear families in an atmosphere that was conducive to learning. And if, in addition, we supported a nationwide program of adult education, we might also change the complexion and the slant of American homes today where small children are growing up with a wholly distorted sense of values.

This is the only way to cut the Gordian knot of education. We must start with the people who already have or are about to have families. It is an absolute psychological fact — attested to by such powerful and divergent groups as the Communists, the Freudians, the Catholic Church, and most recently by the Thomas Coram Research Institute of Education at London University — that by the time a child is six years old, his deepest attitudes have already formed themselves into a rigid structure. And a few hours of schooling a day, under conditions not always ideal, cannot make much of a dent in this structure. James Conant once said, "I have become more and more convinced that it is the home which, to a large degree, determines the nature of the school." Failure to recognize this fact invalidates much of the criticism of our public schools.

Incidentally, this cruciality of the home in learning is recognized in such programs as the Benton Harbor Home Education Learning Project, the Brookline Early Education

Project, several programs of HEW and the parent-as-educator programs of the Home & School Institute at Trinity College, Washington, D.C. — all of which acknowledge the fact that learning in the classroom does not necessarily happen, particularly when home support is lacking.

The growth of programs like these are healthy signs that responsibility for learning must be shared by parents. A survey conducted by Gallup for the Institution for the Development of Educational Activities indicates that most Americans would like to see the parents of school-age children try to do something about their own shortcomings to improve the schools. Indeed, 77 per cent of those polled said they believed that it would be a good idea as a regular part of the public school systems to offer courses for parents to help them aid their children.

One thing is certain: teaching involves the mind. The education of man must be approached from the standpoint of what he is, and, since man from time immemorial has been called a "rational animal," then the school can neglect the intellect only at the risk of losing its very identity. Thinking is what makes man distinctively human, and the major task of education is to give the rational faculty dominance and full play.

TEACHERS' ROLE

Teachers are society's agents in achieving this intellectual objective. Kingman Brewster, President of Yale University, once wrote an essay titled: "If Not Reason, What?" The school will be judged not on how it amuses, conditions, pacifies, or keeps children busy, but on how successful it is in encouraging the play of the mind. Its task is to expose the falsity in the sophism, "What you don't know, won't hurt you." For what you don't know will hurt you. Ignorance, contrary to the adage, is not bliss, and the Book of Proverbs can be taken as a guide when it states: "A gloomy truth is better than a cheerful falsehood."

Sweet reasonableness, or better still. what may be called a "rational outlook" should be the result of effective teaching. The rational outlook is based on the premise that reason can be trusted, that it can and should prevail in dealings among men. It eschews the prescription contained in the little rhyme:

When in trouble
When in doubt
Run in circles
Scream and shout.

Teachers are missionaries of the intellect. Their first and most important task is to promote reason and develop the power of the mind. This is a high calling in these days when the very rationality of men has itself been called into question. The widespread dissemination of psycho-analytical writings has tended to overstate the case for the primacy of the unconscious and irrational impulses in the life of man. As a result, there has grown up a widespread disbelief in the power, and even the desirability, of impersonal thinking. Freud wrote near the end of his life: "I am only sure of one thing, that the judgments of value made by mankind are immediately determined by their desires for happiness; in other words, that their judgments are attempts to prop up their illusions with arguments." D. H. Lawrence frankly exulted in irrationality. "My great religion," he wrote, "is a belief in the blood, the flesh, as being wiser than the intellect. We can do wrong with our minds, but what our blood feels and believes and says is always right."

What makes this doctrine so dangerous is the breadth of its acceptance. Are not the leaders most generally admired, men who think with their blood, and do we not tend to copy those we admire? The voices that are listened to, particularly in times of crisis, are voices vibrant with passion.

I suggest that the control of emotion in the interest of truth should be part of the free-masonry of educated people, that it should be one of the pillars of their self-respect, that it should be a natural by-product of good education.

PERFECTIBLE THROUGH REASON

The business of education deals with man as perfectible through reason. The "rational outlook," the product of this process, is something that can be felt but not seen; it is an intellectual conscience, a special fastidiousness of mind, a gravitation toward the truth, a sense, for example, that one is being soiled or befouled if one indulges in mere name calling, or judges another in anger or envy, or believes things in politics or religion be-

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cause it is to one's advantage, or swallows or regurgitates gossip about another because one dislikes him, or generalizes when all one knows is a particular fact or two, or dogmatizes without ground. The "rational outlook" is the antithesis of the "ad hominem" argument. It rests its case on the merits of the evidence adduced, rather than on the personality of the advocate. Which reminds me of the husband who said to his wife, "The trouble with women is that they take everything personally." And she replied, "That's not true. I don't."

A hundred years ago most educated people, and many of the semi or uneducated as well, seemed to agree on certain fundamental propositions. The Victorians were convinced that much of what they believed or stood for could be explained and defended, and those who disagreed had the task of demonstrating, by logic and evidence, **why** they disagreed. This reliance on reason was thought a great advance; indeed, it was the essence of the idea of Progress, if by Progress one meant something besides inventions and manufactures. It was based on the premise that man, the rational creature, could resist idiotic imaginings and control the promptings of passion and the surge of primitive impulse.

This does not mean that, when the teacher promotes reason, he thereby condemns passion. Nothing could be further from the truth. Experience itself bears witness that passion without reason is blind; reason without passion is dead. Instead of uselessly opposing reason to passion, the teacher opposes reasonless passions to passions coordinated by reason, put into place by the total perspective of the situation. Thought should not lack the heat of desire nor desire the light of thought.

Just as there is reasonableness in thought, so also there should be reasonableness in feeling. The person who flies into a rage when his egg is underdone, or falls into a panic when his temperature goes up one degree, is not being emotionally reasonable; there is nothing in the situation to justify his passion.

Americans are not a phlegmatic people; our feelings are strong and quickly inflammable. But among us there are many people who make a virtue of being excited over nothing.

GREED FOR EXCITEMENT

Too many in our populace are greedy for excitement. They are searching wildly for the thrill, the kick, the new experience. Anything to keep them hopped-up and high. Not only self-styled swingers and bohemian cultists, but also effete middle-agers and bored housewives are sold on the idea that, if an experience is exciting, that in itself is enough to justify it and make it significant.

Professional entertainers and advertisers have caught this fact and taken advantage of it. They know, for example, that mere rhythm, the regular beat of the tom-tom or a band is exciting; the Greeks and our own Indians used to work themselves into a frenzy of excitement by the rhythmic stamping of feet and clapping of hands; even I, an inhibition-bound professor and priest, must confess that I never hear a marching band toot a patriotic tune without being swept off on a wave of patriotic emotion. The popularity of much in the encounter movement — from the "let-it-all-hang-out" of the primal scream to the good "vibes" and the sensuality and goofiness of the nude marathon — can be ascribed to the heady excitement roused in the client.

But there are reasonable and unreasonable enthusiasms. Count me a partisan of excitement if it is a by-product of an interest in something worth being excited about. But much in contemporary music, art, literature, radio, television is not worth being excited about, and feeling for itself and apart from the worth of the object is not a rational end for anyone; if it were, the manic case in the hospital should be the envy of us all.

What counts is whether we are excited about the right things. In Plato's Phaedrus Socrates asks a young man with whom he has been pursuing a discussion of ultimate truth whether they shall go on with the inquiry. "Should we continue, do you say?" replies the young man. "Are there any pleasures worth living for like these?" This is a remark that would come more naturally from a Greek than from an American student. But occasional comments like this give heart to the teacher.

But do not interpret the stress I place on the primacy of the intellect in education as

advocacy of the view that the more intelligent should receive more loving attention. I agree with John Silber, president of Boston University, that institutions in our society (our schools included) ought to be run on an elitist basis — that is, decisions within them ought to be made by those most qualified to make them. I further agree that education itself should be excellent and, in keeping with the sentiments of Madison and Jefferson, education should foster and develop a natural aristocracy of talent and achievement. Our country deserves no less.

MINOR EXCELLENCES OF THE MANY

Yet, it would be a gross misjudgment to think that excellence in education means that we should be more concerned with cultivating the great excellences of the few rather than the minor excellences of the many. The bright are easily educable. They are the self-starters. Only an educational sophist would argue that the bright pupil is penalized and loses interest when he is placed in the same classroom with so-called average students. He generates his own momentum. At one time the line of least resistance for the schools was to organize a program so easy that nobody could get mad at the teacher or principal because his child was flunking. Today, the line of least resistance is to work only with more talented children who don't need much work. While many schools are judged by the accomplishments of their very best graduates, I submit that a fairer judgment would be made on the basis of what they achieve with their average and below average students. They are the more difficult to teach and pose more problems. As the doggerel expresses it:

> One bleak fact will confront you
> And briefly shred plans to rubble.
> For each pupil with a spark of genius,
> There'll be 10 with ignition trouble.

Alarums and nostrums, gimmicks and fads run a recurring cycle in education Thirty years ago James Conant was expressing "fear" that we may educate more doctors, lawyers, engineers, scientists, and college professors than our economy can support." This sentiment was replaced by what an editor of Harpers Magazine called "The Stupidity Problem." The stupidity problem arises because in our highly technological society, the assortment of jobs which need to be done is simply out of kilter with the natural distribution of brains in the general population. With automation there will be less and less demand for brawn — those of low I.Q. will swell the ranks of the unemployable — and a greater and greater demand for the talented to fill the growing number of jobs which call for skill and technical training. The cycle came to a full turn last June when President Ford, echoing Conant, told an Ohio State University graduating class, "You spend four years in school, graduate, go into the job market, and are told . . .You are overqualified."

Dire consequences are supposed to result from either situation. On the one hand, unemployable dullards become society's problem children, "social dynamite," to use Conant's phrase. They contribute to the burgeoning rate of crime, vandalism, drug addiction, and delinquency. On the other hand, the unemployed intellectuals cause political uproar, dissatisfaction, and dissension in countries which cannot use their talent.

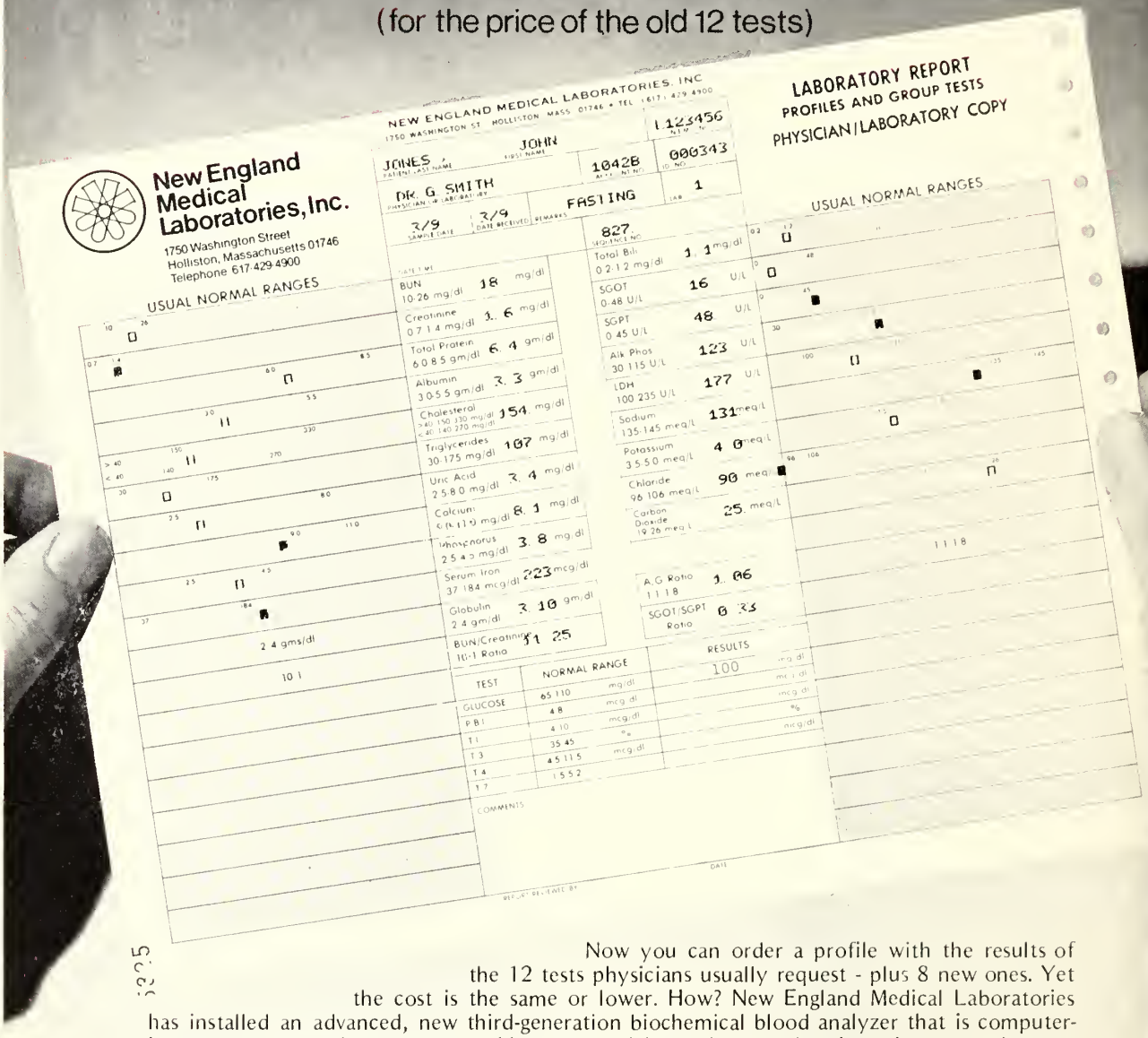
EDUCATION IS NEVER WASTED

But if this is so elsewhere, it need not be the case in the United States. Nobody will deny that you condemn people to frustration and bitterness, when you condemn them to idleness and public charity. But American ingenuity and concern for the underdog are greatly over-rated if they are not able to create worthwhile jobs and training for the less talented. Nor should we look upon college education as futile simply because it does not guarantee a higher income or a job high on the prestige scale. Surely, higher learning has more than a bread-and-butter aspect. It should have something more to offer than a promise of a split-level home, a Cadillac, and vacations in the Carribean. We have oversold the cash value of a college degree. The democratic ideal is to educate everyone to the extent of his ability. Fred Hechinger is right when he points out that "there is no contradiction in being a college-educated worker or farmer." Is it absurd for a truck driver to like Shakespeare, a carpenter to read Greek, or a plumber to be entranced by the study

(Continued on page 153)

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of philosophy? Education is never wasted, whether it is the liberal arts tradition or training in mechanical and agricultural skills.

What must be discouraged and deprecated in our children and in society is a kind of meritocratic mentality which looks down the nose at those in so-called menial occupations. "If I make better grades, or go to college, or become an engineer or physician, then I am a better person than you." This is a damaging philosophy, and I fear it is becoming a national epidemic. When people adopt this way of thinking, it is costly in terms of friendship, self-esteem, productivity and interpersonal relationships. We must re-evaluate the snobbery that makes it noble to possess a college degree and shameful to learn skills that involve a little bit of grease under the finger nails. No matter how dull or boring or dirty a job may be, a worker must feel that it has worth and dignity beyond the paycheck, that in doing it he is making a vital contribution to the common welfare of his country, that he himself is esteemed as a person.

A teacher who fails to see the correlation between scholarship and teaching does not go very far in his profession. Nobody can ever truly teach unless he is still learning himself. A lamp can never light another lamp unless it continues to burn its own flame. No teacher can inspire students who merely repeats his lessons and has no living traffic with his field of study. The story is told of a teacher who applied for the position of principal but was passed over in favor of another faculty member. He asked the reason why. "'After all," he said, "I've had 20 years teaching experience here." "That's not quite the way we looked at it," he was told. "In your case, the board felt what you've had is one year's experience repeated 20 times."

But in final analysis, the most important, and probably the most difficult part, of a teacher's job is to inspire in students a love for learning. This can only be done when the teacher has a deep love of learning, himself. If ideas are important and exciting to the teacher, that enthusiasm will be communicated to the students through the teacher's obvious concern that they learn and learn well. And no substitute will do, especially no facade.

Colleagues, do not lose your missionary zeal! I belong to the Order of Friars Preachers founded by Dominic Guzman in 1216 for the purpose of dispersing the darkness and superstition of his times by an apostolate of study and teaching. The motto of the Dominicans is "Contemplate aliis tradere" — to give unto others the fruit of your thinking. I recommend this motto to all teachers, for to teachers it is given to bring the light of learning to the youth of the nation, to help them experience in this life the delight in contemplation that will reach its final fulfillment in the unalloyed delight of knowing and loving God.

"When Ruskin was called on for an epitaph for his businessman father, he prepared one that he thought almost extravagant in its praise: "Here lies an entirely honest merchant." It would indeed be high praise for any of us, when he has "shuffled off this mortal coil," to have it said of him, "Here lies a really good teacher."

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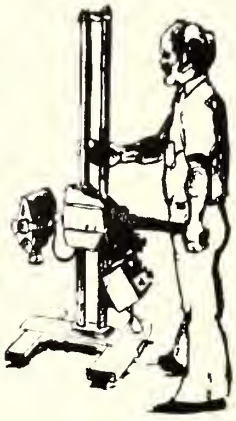
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Editorials

EDUCATION IN A DEMOCRATIC CULTURE

Published elsewhere in this issue of the **Journal** is another in a series of essays on the philosophy of education and family responsibility by Father Joseph L. Lennon, a Vice President of Providence College and long a member of the Board of Directors of Blue Shield of Rhode Island.

While its bearing on medical education and practice is tangential, its plea for greater responsibility for culture in the family environment and a better understanding of the role of education in a democratic society are relevant to all physicians, not only in their own lives, but in attaining a better understanding of the problems of their patients.

Father Lennon notes that:

"Evidence is mounting that the output of schools is not commensurate to the input, that despite the expenditure of more and more money, our schools, judged by almost any criterion, are teaching less and less, that there has been a dip in recent years in college board scores and in such basic skills as the ability to read, write, and solve simple mathematical problems."

For their decline each of us has to accept some of the responsibility. Ever the voice of our conscience, he concludes that "Teachers and school administrators are no more than the agents of a view of life to which our culture is deeply committed." To this we say, "Amen."



DOES THE PUBLIC WANT A SECOND OPINION?

Recent press reports indicate that they apparently do not. Second opinions in elective surgery have been promoted as a means of preventing unnecessary elective surgery. Aside from some inherent problems with the method (Does one get a third opinion if the first two disagree?) there does not appear to be a groundswell of demand on the part of the consuming public for this recent vogue of the planners. Where it has been tried enthusiasm for its use is not in evidence.

In Springfield, Vermont Blue Cross and Blue Shield cancelled a second opinion program for 4,000 workers when after 6 months of trial not a single subscriber had sought a second opinion.

Pennsylvania Blue Shield began a second

(Continued on next page)

opinion program in January of 1976 for 5,000 subscribers and added another 3,500 a month later. Of the 219 persons whose doctors recommended elective surgery, only 17 were sufficiently curious or insecure to request a free second opinion. Only four of them were told that surgery wasn't necessary. We don't know what became of the four.

Finally, Blue Cross and Blue Shield of Greater New York, whence came the original accounts of the experiment with second opinions, reports that only 1,200 of its eligible 5.5 million subscribers have taken advantage of second opinion coverage since it has been available. The plan estimates that more than 100,000 of these subscribers have had elective surgery during this period.

Maybe the public is trying to tell us something.



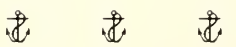
THE DELANEY AMENDMENT

The recent banning of saccharin by the FDA because it caused bladder cancer in rats is ridiculous. The Delaney clause requires banning of a substance if it EVER produces malignant lesions in animals under ANY experimental conditions. This type of action is the inevitable result when political expediency rather than scientific rationale is followed in determining ground rules for the safety of foods and drugs.

The banning of cyclamates a while back, based on the same type of evidence (the feeding of vasts amounts of the substance to animals), left saccharin as the only currently commercially available artificial sweetner. The use of cyclamates has never been shown to be dangerous to human subjects and in fact may be back in use in the foreseeable future.

Saccharin has been available for 80 years, and not a single case of bladder cancer has ever been attributed to its use. Not only is it indispensible in the management of many diabetics, but it is extremely important in the control of obesity. Overeating is one of the scourges of modern society. On the one hand we encourage the populace to eat more wisely and then deprive them of one of the most useful aids to this end. In order to consume an amount of saccharin equal to that given the rats, a human subject would have to drink 800 twelve-ounce diet sodas every day for a lifetime! Diet soft drinks, which eliminate the unreasonable amounts of sugar used as a sweetener, have depended in turn on cyclamate and saccharin. How the soft drink industry will manage this second disaster remains to be seen. It is unreasonable, however, to place an additional burden upon unfortunate diabetics, upon those conscientious souls who are trying to control their weight, and upon industry.

In the long run only the repeal of the Delaney Amendment will place the responsibility for wise decisions where it truly belongs, in the hands of the FDA. The Delaney Amendment must go!



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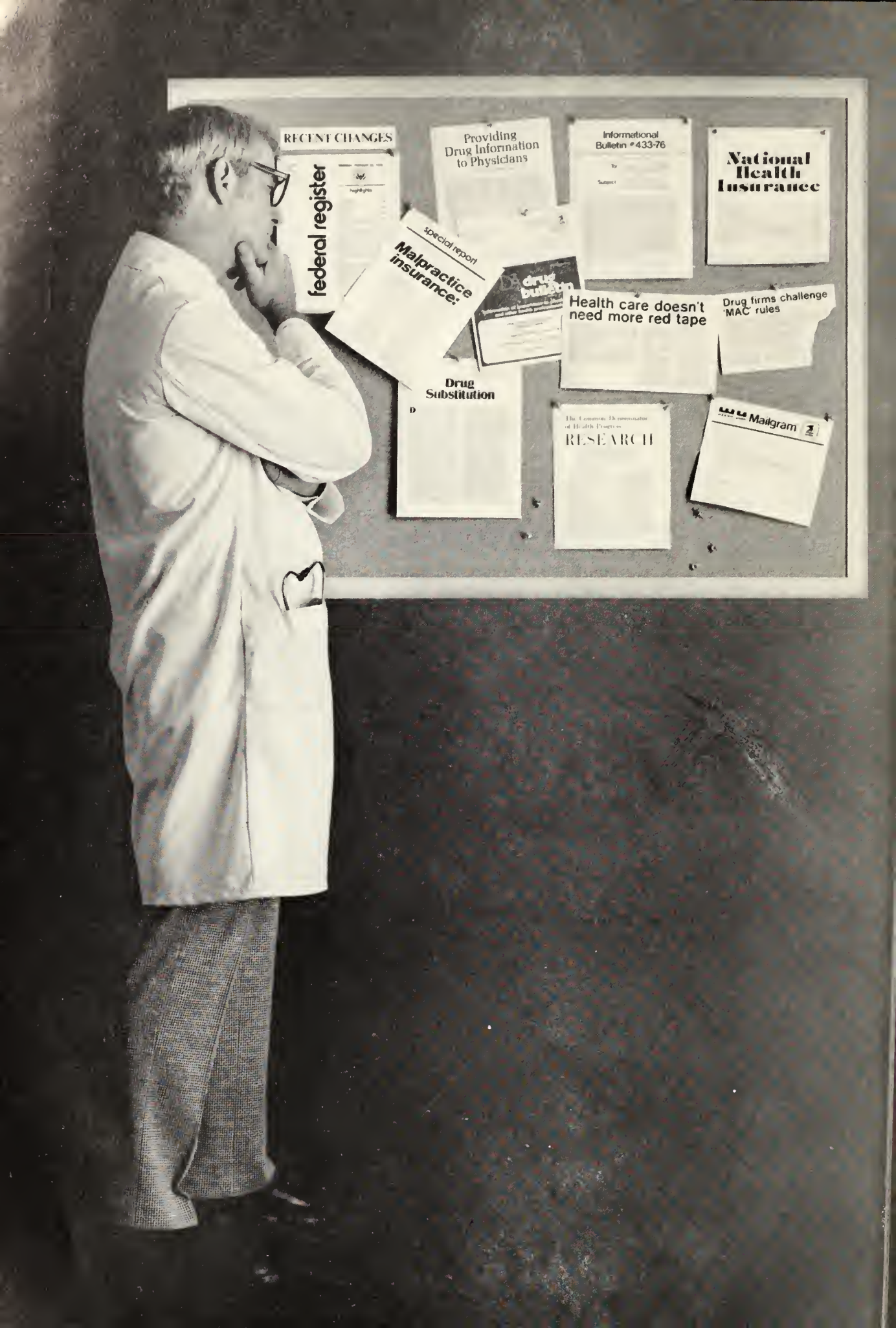
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THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all ns of scrutiny. Your control over patient therapy is i monitored, judged and occasionally abrogated, times by unknown third parties.

The worry is that in the wake of this focus, the rela- hip between you and your patient will be weakened, out offsetting benefits. Consider three examples:

Drug substitution In most states, pharmacy laws, g ations or professional custom stipulate that your eneric prescriptions be filled with the precise prod- t ou prescribe. But in the last five years, a dozen or State laws have been changed, permitting the phar- st in most cases to select a product of the same ric drug to fill any prescription.

ronically, this dilution of physician control has n place against a background of growing evidence urportedly equivalent drug products may be in- valent, since neither present drug standards nor their cement are optimal. In fact, the FDA itself says it ot enforced the same standards for hundreds of ow-on" products that it had applied to the original A approvals. Thus physician control over patient apy is being eroded with a risk that patients may be sed to drugs of uncertain quality.

The major advertised claim for substitution is reduced cription prices for consumers. Yet no documentation y significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is eral regulation designed to cut the Government's bill by setting price ceilings for drugs dispensed to icare and Medicaid patients. Unless the prescriber fies on the prescription that a particular product is ically necessary, the Government intends to pay only he cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

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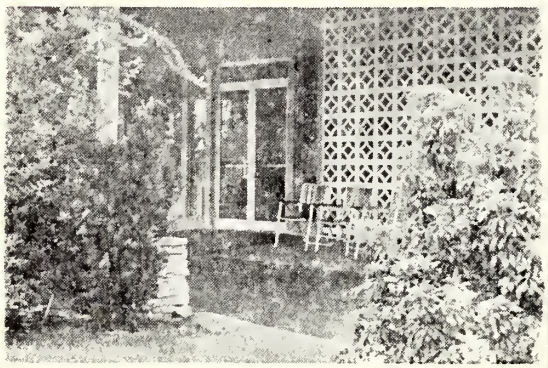
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Stuart Pharmaceuticals announces Hibiclens® (chlorhexidine gluconate), a new antimicrobial skin cleanser useful against a wide range of organisms. It is approved by the FDA for marketing as a surgical scrub, hand wash, and wound cleanser. It is non-toxic and non-irritating and has a persistent effect which is unimpaired in presence of blood or pus. It is not related chemically to any other antimicrobial products available in the U.S.

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Litton Medical Electronics has a new compact single-channel electrocardiograph. Designated the Litton Simpliscriptor EK 31, it may be operated from electrical outlets or its own batteries. Weighs only 12 pounds including batteries.

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There is a new ultra-lightweight Meddev surgical headlight with a belt-borne battery pack. The reflector produces high brilliance at the focus due to computer-positioned miniature mirrors. Side cutouts in the reflector permit binocular vision. Battery life is more than 40 hours. Low wattage produces a cool light.

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* * *

Pfizer announces a new antihypertensive agent. MINIPRESS® (prazosin HCl) is prepared in capsules of 1 mg, 2 mg, and 5 mg. It is a chemically unique vasodilator, mild to moderate in activity, effective in all grades of hypertension. May be used alone or in combination with a diuretic or other antihypertensive agent.

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Lederle has a new broad-spectrum semisynthetic penicillin, presently designated T-1220, which is effective against several types of difficult-to-control gram-negative bacteria. Detailed animal and human studies will continue. Preliminary work in Japan has shown **E. coli, Klebsiella pneumoniae** and **Pseudomonas aeruginosa** to be sensitive to the new antibiotic.

* * *

Scot-Tussin Pharmacal Company, Cranston, R.I., announces a new Sugar-Free and Dye-Free cherry-mint flavor cough medicine.

* * *

Lederle now makes STRESSTABS® with iron. Stresstabs 600 now have added 27 mg of iron and also contain 0.4 mg of folic acid and an increase in vitamin B_6 to 25 mg. Recommended especially for women.

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The Ames Company has a multi-media continuing education program on thyroid function. Titled "Focus: Your Thyroid Patient," the program explains the correlation between clinical findings and appropriate laboratory tests. Available without charge — half-hour film and Monograph/Workbook. Write Ames in Elkhart, Indiana 46514.

* * *

Cambridge University Press (American Branch) released "Sensual Drugs" in January. It presents strong evidence that marijuana, as well as cocaine, heroin and all the hallucinogens, has devastating physical, mental and emotional effects. Hardcover $15.95, paperback $3.95.

* * *

Flowtron Aire describes a system for the prevention of deep vein thrombosis in the legs and for the reduction of leg edema. The device consists of leggings which can be inflated. Gently alternating pressure aids in emptying the venous sinusoids in muscles and reduces edema.

(Continued on next page)

Dennison has a new plain paper copier. Named the BC-22, it has a first copy speed of only 5 seconds and produces 20 copies per minute, completely dry, on ordinary paper. It uses true bond paper and it can copy on one's own letterhead, on other preprinted forms, or on colored stock.

* * *

Academic Press has released a book which supports medical benefits of high dosage of vitamin C. "Vitamin C: Its Molecular Biology and Medical Potential" is the work of Dr. Sherry Lewin of the North East London Polytechnic. The book sells for $17.00.

* * *

Baka Manufacturing has a new wrap-around support bandage. Made of patented panels of Helanca-lined elastic to prevent rolling and resist chafing. Dale Combo® Pile with Celcro® closure provides adjustability. One size fits everyone. Made as rib belt, waist support, and elbow, ankle, and knee supports.

The National Retail Merchants Association, 100 W. 31st St., New York City 10001, has a "Checklist on the Hiring Interview" which can be obtained for $2.00. Federal law makes it extremely inadvisable to ask certain questions of a prospective employee. It is an outstanding bargain even though it is a small 3-page folder. If one is an employer it is essential — if not, it is an education — absolutely priceless. Everyone should have a copy.

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ONE SENTENCE ESSAY

There is the case of one Mrs. Cooperman who went to court to change her name to Ms. Cooperperson.

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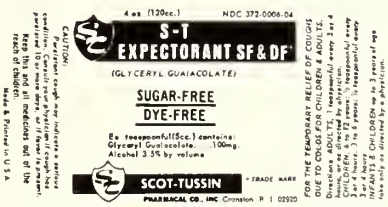
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TUBERCULIN DUAL TESTING

(Continued from Page 128)

ful interpretation to less than 2 per cent of the total population in both cases.

Acknowledgement is made to Eleanor Olson, R.N., who helped with this study.

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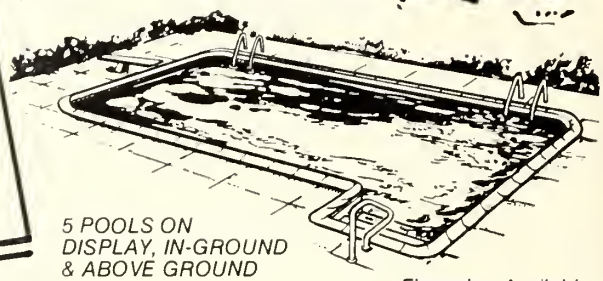
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COST CONTAINMENT AND QUALITY OF CARE

(Continued from Page 144)

crease category was hospitals at 13 per cent. The remaining categories all fell in a range of increase between seven to 10 per cent (physicians were at 9.5 per cent).

While these overall increases are of concern for both their impact on the total economy and the reciprocal impact on one another, it should be noted that much of the increase is due to inflation. Of the average overall increase of 11.4 per cent, roughly two-thirds is attributable to inflation and one-third to a real increase in services and supplies. The percentage of the increase in health care expenditures attributable to a real increase in services and supplies is roughly equivalent to the rate of growth in the real gross national product. Therefore, if health care price inflation could be controlled, the rate of growth in real health care services could be sustained with no greater economic effort than we are now making and with no real reduction in the present level of quality of care.

EQUITY BETWEEN QUALITY AND COST

In brief, the problem you face in achieving equity between quality of care and cost containment in medical care is very real and will become more acute. Your present efforts must be sustained and, it is hoped, intensified. However, certain aspects of health care cost containment and issues of quality are beyond your control; other groups must assume responsibility. Certain aspects, specifically hospital care, have been interpreted in certain circles as beyond your control. This may be true, but I would argue that they are certainly **not** beyond your influence at least in your individual capacities as members of organized hospital medical staffs.

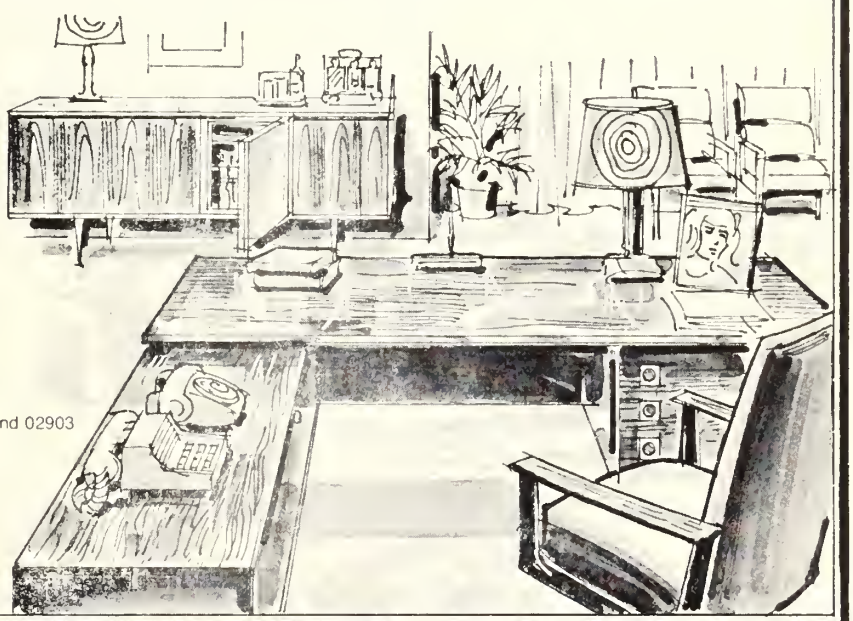
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person, physician or otherwise, who did not understand the need for compassion toward the individual patient in the issue of cost and quality. Our current and future problems come from a lack of common perception on compassion for the group. The old public health dictum of "how to do the greatest good for the greatest number with the funds available" is as pertinent to all of us today as when it was first used many decades ago.

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⚓ ⚓ ⚓

ONE SENTENCE ESSAY

Hearing is now knowing; knowing is not understanding; understanding is not believing; believing is not doing.

. . . from the "Maxims" of Mohan Singh

⚓ ⚓ ⚓

CORRECTION

Michael J. Faulkner author of "Effects of Variables on LOS" (Editor's Mailbox, **RIMedJ**, Feb 77), should have been identified as Director, Organizational Services, Rhode Island Health Services Research, Inc.

GENESIS

British composer Ralph Vaughan Williams was a grand nephew of Charles Darwin. At age six or seven, Ralph asked his mother about THE ORIGIN OF SPECIES and what it meant. She answered: "The Bible says that God made the world in six days, Great Uncle Charles thinks it took longer: but we need not worry about it, for it is equally wonderful either way."

Boston Symphony Orchestra
program notes

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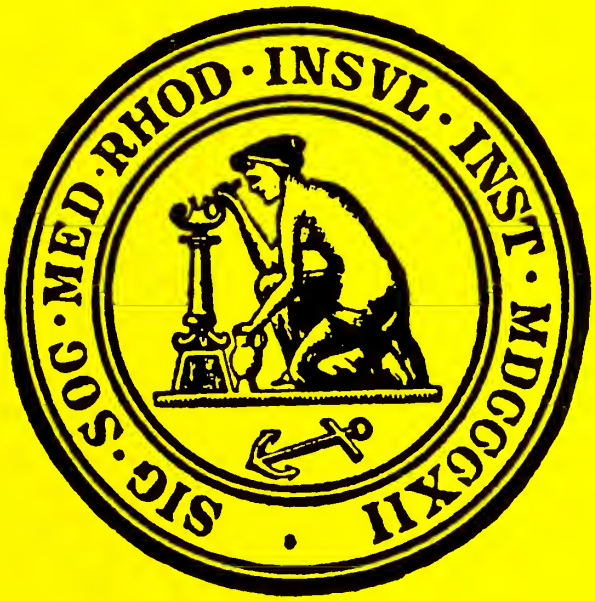
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April, 1977 Vol. 60, No. 4



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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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When using neomycin-containing products to control secondary infection in the chronic dermatoses, it should be borne in mind that the skin is more liable to become sensitized to many substances, including neomycin. The manifestation of sensitization to neomycin is usually a low grade reddening with swelling, dry scaling and itching; it may be manifest simply as failure to heal. During long-term use of neomycin-containing products, periodic examination for such signs is advisable and the patient should be told to discontinue the product if they are observed. These symptoms regress quickly on withdrawing the medication. Neomycin-containing applications should be avoided for that patient thereafter.

PRECAUTIONS: As with other antibacterial preparations, prolonged use may result in overgrowth of nonsusceptible organisms, including fungi. Appropriate measures should be taken if this occurs.

ADVERSE REACTIONS: Neomycin is a not uncommon cutaneous sensitizer. Articles in the current literature indicate an increase in the prevalence of persons allergic to neomycin. Ototoxicity and nephrotoxicity have been reported (see Warning section).

Complete literature available on request from Professional Services Dept. PML.

Rhode Island Medical Journal

APRIL, 1977 VOLUME 60 No. 4

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CONTINUING MEDICAL EDUCATION CALENDAR

MAY

4 SUDDEN INFANT DEATH SYNDROME. Topics will include: "National Institute of Child Health and Development Research Program in SIDS," Eileen Hasselmeyer, R.N., Ph.D., National Institute of Child Health and Development of HEW; "Post-Mortem Roentgenographic Dye Studies of Infant Deaths," Lawrence R. Simson, Jr., M.D., pathologist at Edward Sparrow Hospital, Lansing, Michigan; "Toxicologic Findings in Crib Death — A National Survey," Bryan Finkle, Ph.D., Director of Center for Human Toxicology, Salt Lake City, Utah; "The Influence of SIDS on Family Functioning," Stanford B. Friedman, M.D., Director, Division of Child and Adolescent Psychiatry, University of Maryland School of Medicine; and others. 1:00 P.M. to 9:30 P.M., Bishop McVinney Auditorium, Providence, RI.

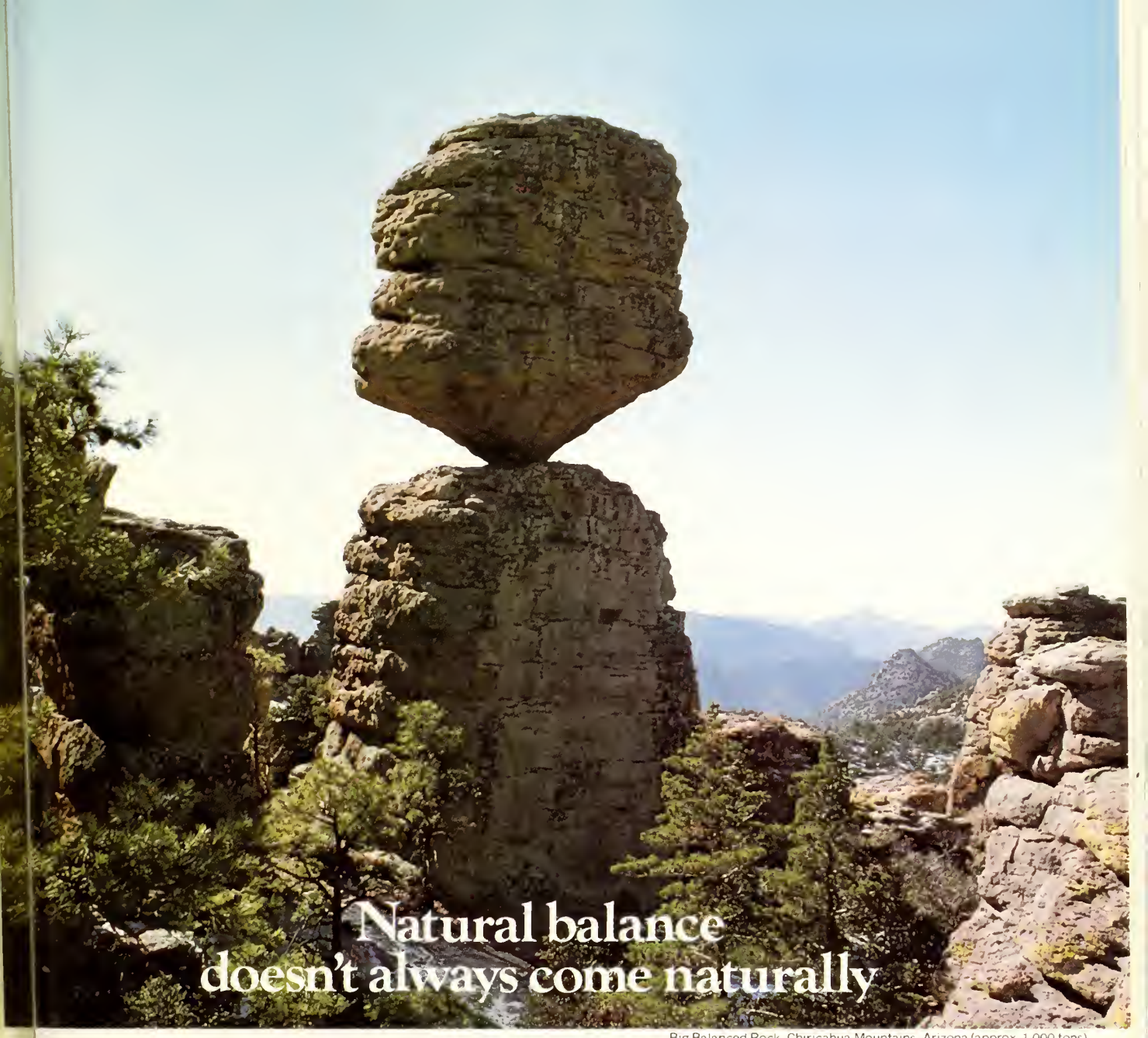
10 THE SIMEONE LECTURE: "A PHYSICIAN'S REFLECTIONS CONCERNING THE END OF MEDICINE AND THE PURSUIT OF HEALTH," John C. Beck, M.D., Director, Clinical Scholars Program, The Robert Wood Johnson Foundation. Sopkin Auditorium, The Miriam Hospital, 8:15 P.M.

11 MEDICAL SOCIETY ANNUAL MEETING. Chapin Orator: Carl W. Walter, M.D. Cranston Hilton Inn, 1 P.M.

13 "DRINKING MOTHERS AND DEFECTIVE BABIES — STUDIES ON THE FETAL ALCOHOL SYNDROME," N. Paul Rosman, M.D., Professor of Pediatrics and Neurology, Boston University School of Medicine; Director of Pediatric Neurology, Boston City Hospital. Kay Auditorium, Roger Williams General Hospital, 10:30 A.M.

19-20 BUTLER SYMPOSIUM: "MARRIAGE AND THE TREATMENT OF MARITAL DISORDERS: PSYCHOANALYTIC, BEHAVIORAL AND SYSTEMS THEORY PERSPECTIVES." For information, contact Butler Hospital, 456-3750.

25-26 CURRENT CONCEPTS IN FETAL AND NEONATAL CARE. Third Annual Seminar of the Perinatal Committee of the Rhode Island Medical Society. The Marriott Inn. For information, contact Dr. William Oh, Women and Infants Hospital.



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Usage in Children: Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy: See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

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Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in severely ill patients with urine volume less than one liter/day, the elderly or diabetics, with suspected or confirmed renal insufficiency. Periodic determinations of serum K^+ should be made. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **The presence of a widened QRS complex or arrhythmia in association with hyperkalemia requires prompt additional therapy.** Thiazides are reported to cross the placental barrier and appear in breast milk; fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and other adverse reactions that have occurred in the adult may result. When used in pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus. Adequate information on use in children is not available.

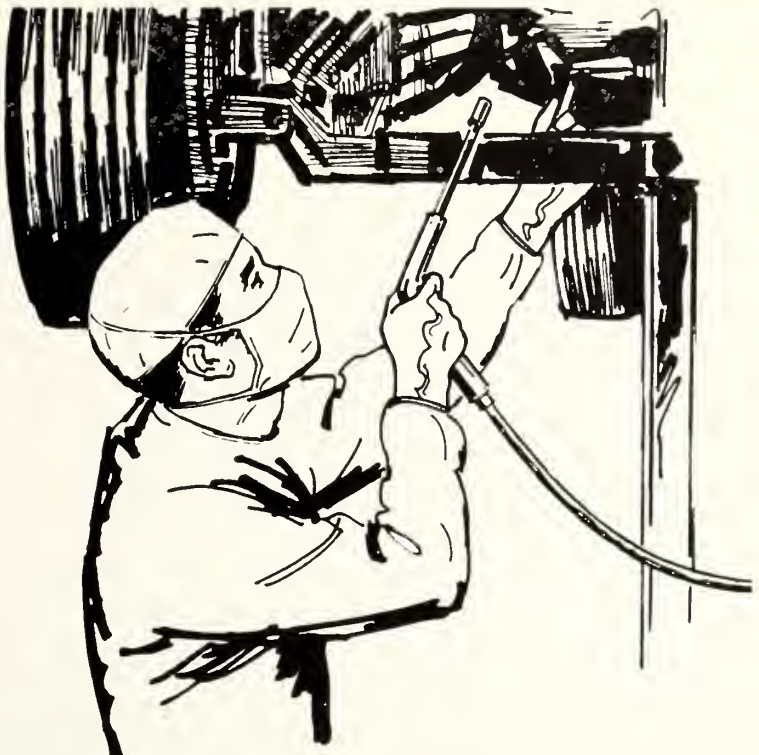
Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics, or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium® (triamterene, SK&F Co.), and leukopenia, thrombocytopenia, agranulocytosis and aplastic anemia have been reported wit thiazides. Do periodic blood studies in cirrhotic to check for nondrug-related variations in bloo pictures, and in patients with folic acid depletion since 'Dyrenium' may contribute to appearanc of megaloblastosis. Antihypertensive effect ma be enhanced in post-sympathectomy patient Use cautiously in surgical patients. The followin may occur: transient elevated BUN or creatinir or both, hyperglycemia and glycosuria (diabet insulin requirements may be altered), hyperur cemia and gout, digitalis intoxication (in hyp kalemia), decreasing alkali reserve with possib metabolic acidosis. 'Dyazide' interferes wit fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weaknes dizziness, headache, dry mouth; anaphylaxi rash, urticaria, photosensitivity, purpura, oth dermatological conditions; nausea and vomitin diarrhea, constipation, other gastrointestinal di turbances. Necrotizing vasculitis, paresthesia icterus, pancreatitis, xanthopsia and, rare allergic pneumonitis have occurred with thi zides alone.

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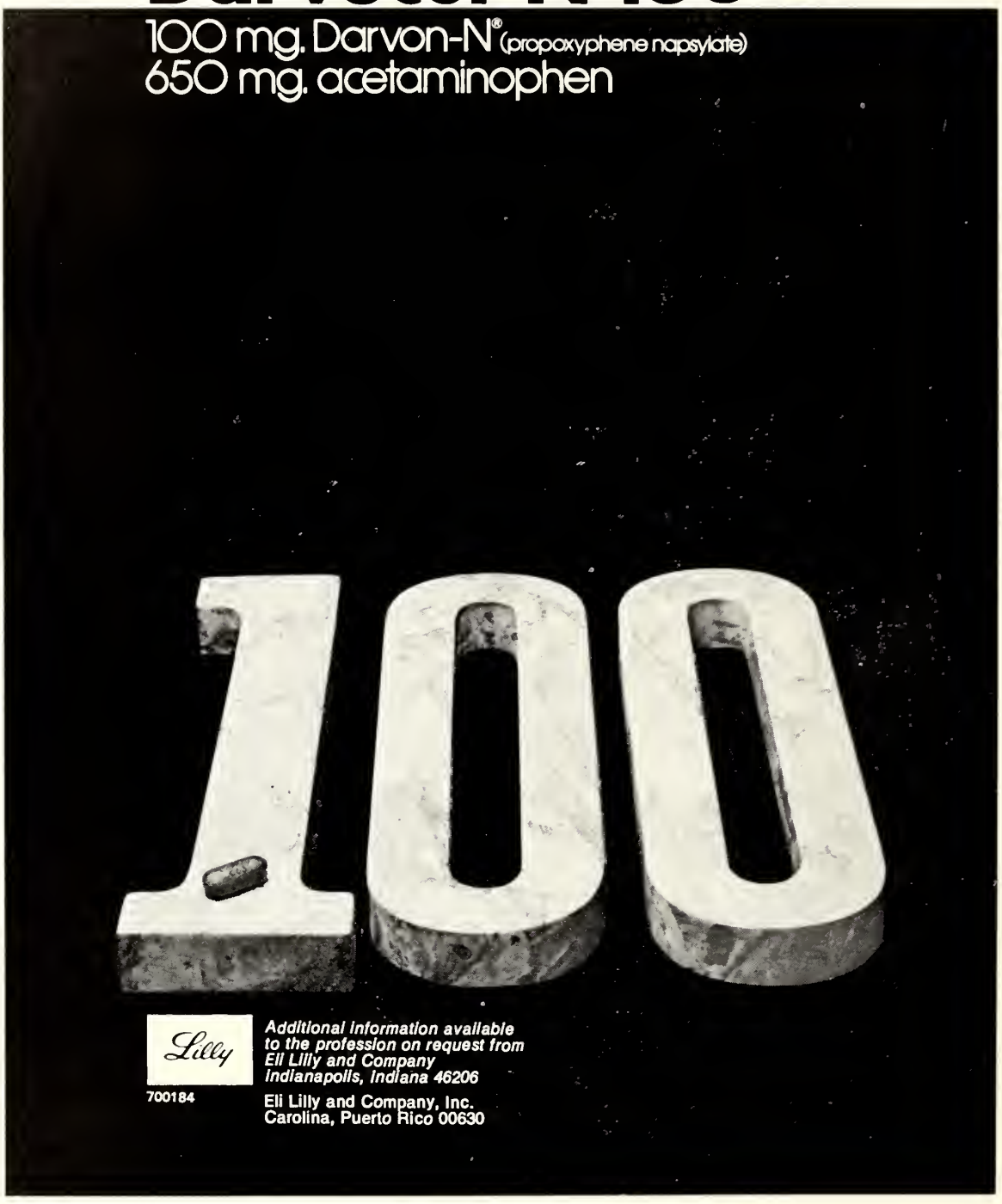
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The Future Of The Visual Sciences In Rhode Island: An Introduction

By Stanley M. Aronson, M.D.

In the autumn of 1975, a committee was convened, first to evaluate the current status of the visual sciences in the Brown University Program in Medicine, and then to design a program in academic ophthalmology consistent with Brown's past achievements and potential resources in this scientific discipline. It became immediately apparent to all concerned that the future of the visual sciences at Brown and the future of clinical ophthalmology in the state of Rhode Island were inseparably intertwined. Accordingly, the committee, initially composed of campus and clinical faculty members, was enlarged to include Doctor Reid S. Appleby, Vice President of the Rhode Island Ophthalmological Society.

This broadly based committee met on a few occasions, augmenting their numbers by inviting Doctors A. Robert Bellows and Harold F. Spalter to join in their deliberations. (Doctors Bellows and Spalter are eminent ophthalmologists, practicing in Boston and New York, and both are graduates of Brown University.)

In the spring of 1976, an open forum was held at Brown University to which all practicing ophthalmologists in Rhode Island were invited. The fruitful discussions conducted during this informal forum assisted the committee materially in its future plans. During the first week of June, 1976, just prior to Commencement Day, a scientific seminar titled **The Future of the Visual Sciences** was held at the University. This larger meeting was in response to the suggestion from the Committee that we seek advice from some of the nation's leading academic ophthalmologists.

A distinguished group of ophthalmologists including Doctors Arthur H. Keeney, Carl Kupfer, Steven M. Podos, Sidney A. Fox and Bruce E. Spivey, accepted the invitation of the Committee and participated in the two-day seminar. The out-of-state speakers emphasized two premises: first, that Brown could not afford to construct a traditional department of ophthalmology with an expensive and autonomous clinical center; and second, that Brown was not encumbered by any past traditions in the field of academic ophthalmology and could therefore afford to create an innovative new curriculum for the study of the visual system.

The six papers incorporated in this issue of the **Journal** represent the summaries of the presentations at this meeting. The seventh paper is an edited version of the final report of the Committee on Ophthalmology.

Let me express my gratitude to the Rhode Island Ophthalmological Society and the Brown Medical Association for co-sponsoring this symposium, to the speakers for their outstanding contributions and, particularly, to the members of the Committee on Ophthalmology for their truly seminal report. The final statement of this report is worth repeating: "Brown has the unique opportunity to establish an independent Section of Visual Sciences which can become a national center of excellence for ophthalmic investigation and a prototype for excellence in ophthalmic education. The University has accepted this challenge and hopes to implement the program promptly, recognizing the problems of funding, personnel and space."

STANLEY M. ARONSON, M.D., *Dean of Medicine, Brown University.*

Division of Biological and Medical Sciences
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I. Ophthalmology In Medical Student Education: Philosophy, Content, And Process

By Bruce E. Spivey, M.D.

Ophthalmology developed as the first recognized specialty in medicine in the middle 1800's. Since that time ophthalmology seems to have given the highest satisfaction to its practitioners.[1] Further, the percentage of ophthalmology residency positions filled is the highest of any specialty, being consistently 98 to 100 per cent.[2] Fewer foreign graduates are in the training programs than in any other specialty (8 per cent as compared to 35 per cent in General Surgery and Obstetrics and Gynecology and 16-25 per cent for most other specialties).[3] Much more subjective, but as real to those in the specialty, are the consistently high personal and professional qualities of most individuals who choose ophthalmology as a specialty.

Despite such praiseworthy characteristics, it is also true — at least in the United States —that ophthalmology has been poorly taught to undergraduate medical students in most medical schools. There are several reasons for this. First, there is a strong tendency to give a few lectures with a little practical experience. At some schools this is desired by the ophthalmologists, who wish to focus on residency education; at others it is forced upon ophthalmologists by the curriculum committees. Second, ophthalmology has a nomenclature that is scarcely comprehensible to other specialists, let alone medical students. Formal education in ophthalmology appears, in many cases, to be predicated on the notion that the field is a mystifying specialty of little interest or importance to the undergraduate. However, this inappropriate assumption is counter-productive to general medical education and patient care. In fact, the frequency of eye-related complaints in **primary care** situations, revealed both by survey and personal observation, is 5 to 10 per cent of all complaints.[4,5,6] No curriculum in the United States has 5 per cent of time or effort devoted to ophthalmology,[7] but this probably is appropriate.

With proper organization and a clear statement of what it is the student needs to know and be able to do, it is my premise and observation that medical students can learn and practice skills in resolving at least seven high priority, common ocular problems in far less than 5 to 10 per cent of the general medical school curriculum. This premise and the basis for the observation is based on a ten-year, extensive involvement and commitment to medical school education in ophthalmology (and, no doubt, is affected by the bias of that experience).

LEARNING: THEORY AND PRACTICE

No one as yet knows exactly how individuals learn. We can say that individuals learn differently and that they seem to learn best when the need to know is high. Education has been contrasted to training by Skinner. He is of the opinion that, when we know what we are doing, we call it training; when we don't, it's education!

What specific concepts from learning theory[8] should be kept in mind while developing a curriculum and learning experiences in ophthalmology for medical students? Not only do individuals learn differently and at different rates, but there is a spectrum of knowledge, attributes and skills — some of which

(Continued on next page)

Presented at a conference on The Future of the Visual Sciences, at Brown University, June 1 and 2, 1976.

BRUCE E. SPIVEY, M.D., *Chairman, Department of Ophthalmology, Pacific Medical Center, San Francisco.*

the student needs to learn in depth and others with which he needs only to become familiar. First, therefore, students must be guided to the level of learning that is appropriate. The education process frequently is guesswork if what is expected of the student is kept hidden by the teacher. One method of increasing clarity and communication in the teaching-learning process is to use educational objectives. By the use of clearly-stated objectives of what is expected, when and where the knowledge, attribute, or skill is to be used, and how it will be measured, the internal quality control of the educational process can be improved — something that is especially important in health professions education. Second, learning is enhanced by providing immediate assessment with appropriate feedback to students. Third, if skills are involved, practice is necessary to reinforce the skill, preferably with supervision so the learner is confident that he is doing what is correct. Fourth, allowing each student to learn under a variety of conditions or circumstances is important so that learning can be transferred more easily to different settings. Simulation can facilitate this transfer as well as enhance the initial acquisition of the skill in a more controlled, less threatening, and safer environment. Finally, as a philosophical commitment, any teacher's goal should be to become **dispensable** for the student — by producing individuals who are lifelong self-motivated learners.

To conclude, we must operate on the principle that teaching is not the same as learning, that exposure is not the same as mastery, that recall does not equal application, and awareness is far from commitment.

Most of us have grown up in a time-constant curriculum, which is an anachronism if we follow the learning theories just enunciated. Given individuals' differing learning rates, interest and motivation, and needs to know, it is unreasonable to expect that all individuals will learn to the level of competence anticipated and in the same length of time. This also fails to recognize prior competence and results in a situation where the time is constant and achievement is variable. My opinion is that we should provide an environment where achievement is more constant and time is variable. Using objectives and careful evaluation of performance not tied to an arbitrary number of hours or lectures, this goal is possible to implement and achieve.

Implementation of any educational program produces compromise. Medical students' education should be limited to the knowledge and skills appropriate for medical students. In Ophthalmology, for example, indirect ophthalmoscopy, refraction, and surgery are not skills that seem to me to be reasonable for medical students. Our expectations must be realistic. Since skills are measurable and tangible, I shall frequently use them as examples; however, it is just as important to be concerned with concepts and theories.

The ophthalmologist's vocabulary presents another distinct consideration when implementing a curriculum. However, this problem is more apparent than real, since the acquisition of 15 to 20 new terms plus a clear framework for organizing basic concepts can provide such a clear framework to the student, who usually has no structure[9] in which to place the isolated facts he learns early in his contact with a new field.

Mentioned previously is the desirability of "transfer" of training. Learning should occur in the context and, if possible, in an environment similar to that in which the skills will be utilized; specifically, medical students learning about ophthalmology in an ophthalmology clinic may be less likely to transfer what they have learned than if they acquire ophthalmologic skills in the medical or general outpatient clinic, emergency room, or pediatrics clinic, where most will apply such skills in the future. While impressive to the student, the ophthalmologist's examining lane, offering exposure to many pretty gadgets, is not the type of setting in which the skills will be utilized. The exposure to the eye clinic can well be utilized for recruitment purposes, and simply to inform the individuals what an ophthalmologist does and even how much the equipment costs. Most teaching and learning should occur in the setting in which the knowledge and skills will be utilized, and consequently for medical students this is the general clinic or general hospital patient. A dichotomy usually exists in specialty education such as ophthalmology, since learning occurs best in a real setting (one which

is familiar and which will be used again) whereas teaching seems easiest where the resources are!

CURRICULUM CONTENT

Biomedical knowledge, skills, and some attributes in ophthalmology have been generally accepted. In 1968, utilizing a technique developed for the specific task,[10] a questionnaire containing possible objectives, and organized in easily understood categories, was circulated to more than 3,200 individuals (all practitioners, generalists, specialists, teachers, house officers, students and faculty members in the state of Iowa). There was a 50 per cent response rate overall.[11] At the same time a 100 per cent response rate was obtained from one class of medical students in Minnesota. The responses from approximately 40 per cent of the Iowa medical students of two years and the 100 per cent forced response of the medical students in Minnesota were identical. The generalizability of results appears great, and those individuals who did not respond seem as if they would have responded in a manner similar to the ones who did.

The questionnaire organized the objectives around seven major problems or diagnostic subjects that present themselves to any primary care physician: 1. ophthalmoscopic findings in systemic disease, 2. general ocular examination and visual acuity problems, 3. red eye, 4.trauma and emergencies, 5. pupillary and disc problems (neuro-ophthalmologic problems), 6. glaucoma and 7. strabismus.

Questionnaires were so structured that objectives ranged from the obviously minimal to the near-specialist level (almost from knowledge that there were two eyes in the head to ability to do cataract surgery!). Individuals were requested to respond to one of five "forced choices" for each specific behavior, i.e., to indicate whether a given objective was: 1) essential; 2) desirable, but not essential; 3) useful, but not required; 4) of no importance; and 5) no basis for response. This same questionnaire was administered in a validation study to practitioners in the state of Florida[12] and to a wide range of practitioners in the Netherlands.[13] It has recently been repeated in Australia.[14] Interestingly, the objectives that were chosen and ranked as the top 20 (with one exception) were the same in each of the four studies.

Of the nearly 1,700 respondents in the initial study only 130 were ophthalmologists. The academic ophthalmologists—68 professors of eye departments around the country—responded in a manner identical to the non-academic practitioners in ophthalmology. The responses of the "general practitioners" and medical students were very simliar in that they were of the opinion that much more skill and knowledge should be acquired than the ophthalmologists believed to be essential. The nonophthalmic specialists expressed views that were intermediate but somewhat more like those of the ophthalmologists than those of the generalists. A typical example of differences of opinion between general or primary care physicians on the one hand and the ophthalmology specialists on the other, involved screening for color vision. Seventy-three per cent of the generalists felt this was essential in contrast to only 3 per cent of the ophthalmologists. It is obvious that the generalists were frequently confronted with the problem, and the ophthalmologists, knowing that little could be done about color vision abnormalities anyway, valued it very little. There were two examples of the opposite situation in highly content-specific areas: 52 per cent of the ophthalmologists considered confrontation visual fields to be necessary, as compared to only 25 per cent of the generalists.

Thus, there is strong agreement — accepted by the Association of University Professors in Ophthalmology and most ophthalmology teachers — on the basic curriculum content in ophthalmology for medical students. It is important to emphasize that certain matters were not included in the questionnaire which may be of particular importance. These include the socio-economics factors in blindness and special interests of many faculty members who may be teaching ophthalmology to medical students.

Many persons, especially traditional teachers, are of the opinion that an objectives-oriented curriculum will hold back students or prevent the bright students from reaching excellence. In theory and in practice I reject this concern. Objectives establish a base — one which the brighter students eas-

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ily exceed if they are internally motivated, and a base that the less bright or less motivated will certainly achieve. The basic level in this curriculum is far beyond what **any** class of medical students in the past has achieved!

THE CURRICULUM PROCESS

There are two basic reasons for any clerkship in medicine: one for student learning, and the other for recruitment to the specialty.

As a reality check, learning theory is attractive and learning practicalities are desirable. But in constructing a curriculum and implementing it, the process frequently is compromised: available curricular time is limited; faculty time and energy is limited; because of patient limitations, it sometimes is difficult to provide adequate opportunity for the acquisition and practice of skills; specialists interested in residency education, who must repetitively teach medical students, frequently project a bored or negative attitude that tends to result in minimal learning for medical students; and faculty with clinical pressures from residency or practice requirements may feel a severe ambivalence over significantly disrupting patient care in order to teach medical students about ophthalmology. This can fragment the students' learning experiences, and it contrasts with a more ideal world which will allow: 1. individual pacing; 2. practice of skills with corrective feedback; 3. opportunity for student to demonstrate competence when he feels ready to do so; 4. appropriate faculty use of time for patient examinations after basic skills are acquired (e.g., not during the time necessary to find out how to turn on the ophthalmoscope); and 5. opportunity for repeat or re-learning experience as appropriate.

How may we go about producing such a curriculum? First, we must be explicit about what we expect of our students. That includes, according to my bias, educational objectives. Beyond that, many changes in a traditional curriculum may facilitate optimizing these objectives. Clearly, no one method is appropriate for all environments and teachers. Desirable educational activities seem to me to be **not** repetitive lectures given by disinterested and harried faculty on their pet subjects, but rather use of some overall organizer, which can present the objectives and show students the learning resources available; specifically, books, self-instructional materials, simulators and others. In addition, small group sessions with faculty and students — with and without patients — are necessary and desirable.

Considerable variation exists in medical school curricula today in contrast to a decade ago. Therefore, specifics must vary from school to school. There are, however, certain generalities which can be stated.

Ophthalmologic education should begin with presentation by ophthalmologists and visual scientists of information in those aspects of basic science curriculum conforming to anatomy, physiology, biochemistry, histology, and others.

The introduction to Clinical Medicine, or its analogous physical diagnosis course, offers a perfect opportunity to present basic examination of he eye and ocular adnexa, along with the screening neuro-ophthalmologic and ophthalmoscopic examinations. The medical or outpatient rotation is an excellent time to insure that skills in the general examination, recognition and treatment of red eye, and ophthalmoscopic examination are practiced.

In a two-week rotation on ophthalmology utilizing self-instructional units, small group sessions, and individual patient examination under the supervision of a resident or staff ophthalmologist, the red eye, glaucoma, plus the previous examination skills (with or without the slit lamp) can be reviewed, practiced, and evaluated. Involvement by ophthalmologists in the emergency room and pediatrics rotations will allow completion of trauma and trauma competencies.

Those students with further interest in ophthalmology then can spend more elective time on the service in specially designed rotations. Rotations for students interested in family practice, internal medicine, neurology, pediatrics, neurosurgery, and other specialties can be appropriately constructed in addition to the clerkships constructed for students considering ophthalmology.

OPHTHALMOLOGY EDUCATION AND RESIDENCY NONOPHTHALMOLOGIC TRAINING

The analysis of responses by specialists to

the questionnaire revealed what might be expected, that is, emphasis of the special needs of various specialties. For example, urologists as a group felt that the skill necessary to use the ophthalmoscope is considerable and one in which they need far greater capability. Similarly, we can see clearly that prognosis in strabismus is important knowledge for pediatricians, but probably not of much concern to others, and that special ophthalmic findings in systemic disease would be important in internal medicine. Special neuro-ophthalmologic skills essential for neurologists and neurosurgeons would have much less applicability for future pathologists or specialists in obstetrics and gynecology. Special capability in evaluating extraocular muscle movement might be very important for otolaryngologists.

Thus, recognizing that nearly 100 per cent of students will specialize, the goal must be for ophthalmology departments to spend much greater time and effort in the education of all interns and residents regarding what they need to know about ophthalmology for their own specialty, limiting the basic preparation of medical students to a clear but realistic number of objectives. Utilizing the "need to know" to capture greater interest and attention — as well as commitment by the intern or resident — will have far greater impact on producing practitioners skillful in treating eye problems than occurs presently.

WHAT HAS BEEN DONE?

Simply developing objectives, even with some national involvement, does not mean that they will be followed. I should like to trace the generic steps necessary to develop a curriculum and then comment on what has been done in ophthalmology. The "quick and dirty" method is just to "wing it," i.e., implement what you think the student needs or, more frequently, what you think he should have plus what you, as a teacher, like to teach. A somewhat more rational and desirable approach is to: 1. establish content; 2. recognize abilities and goals of the learners; 3. establish final objectives on grounds of what learners need and what you can provide; 4. plan the teaching-learning experience, and, 5. as step number 4 is being implemented, evaluate reality and objectives and recycle back to content, repeating the process each time the material is presented, or each year.

An extension of locally controlled curriculum implementation is a larger plan which I have used to achieve acceptance and national implementation. It begins by ascertaining what the student or learner needs. Quite possibly, this program was successful because it addressed a national need which was a problem for academic ophthalmology.

A learner is expected to be able to solve persistent problems, using generalizing skills, such as the seven problem areas of ophthalmology. By developing potential objectives, ones which are possible for students to achieve and in language that is palatable to noneducationalists, we then can involve others. In the case of ophthalmology, this implies the Association of University Professors in Ophthalmology (AUPO) (chiefs of all eye departments), practitioners, faculty, and students. On this basis we can more confidently convert the objectives into realistic and realizable educational plans. Then we can plan and implement the instruction in the form of learning experiences relating to the objectives. Evaluation devices that test the important criteria must be included. Such a plan will result in a curriculum that, after 5 or 6 cycles, will facilitate all students' meeting their needs by achieving the objectives.

Once the seven problem areas were defined and accepted, several persons (i.e., Doctor Gary Arsham, with the help of Doctor August Colenbrander and myself) undertook the development of self-instructional "units" which would correspond to the seven problem areas. Doctor Arsham was responsible for the five units now available and especially for the first unit, ophthalmoscopy.[15,16] The mannequin utilized in the ophthalmoscope unit is especially important in providing simulations.[17] It is important to emphasize that thousands of hours were consumed in the development of these units, including student trial and modification of the units and student validation.

In the unit on ophthalmoscopy, student validation occurred in two ways. In the first instance, by testing sophomore medical stu-

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dents at the University of Iowa and senior students ready to graduate on the basis of the same examination (the sophomores having been taught by the self-instructional unit and the seniors in the usual manner). It was found that the sophomores were, as a group, far superior to the seniors.[15] Secondly, at the University of Texas (Southwestern at Dallas) a special study was established[18] to test a National Medical Audiovisual Center (NMAC) unit (a unit revised with our cooperation), the original Arsham unit, and the best the instructor could do. The outcome revealed that the self-instructional units were as good as or better than the best experienced instructor could do in an all-out one-time effort. It required much less faculty time to use the self-instructional units.

With support from the National Medical Audiovisual Center, five units (slide-tape student manual) are now available at minimal cost from the Government Services Administration. Each of these units addresses one of the major patient problem areas objectives determined in the original study. At the same time, while the five units were completed using slide-tape equipment, certain skills which are much better taught in action or motion were not included. Subsequently, therefore, we have completed a video-tape which instructs (but does not evaluate student performance) in such diverse areas as confrontation visual fields, corneal examination, examination of the pupil, anterior chamber depth, motility, basic screening, instillation of drops, eversion, patching, superficial foreign body removal, irrigation, and ocular massage.

Available texts in ophthalmology for medical students are quite good, but far more than most students learn — and the texts are not organized into the seven problem subjects. A joint committee of the American Academy of Ophthalmology and Otolaryngology (AAOO and AUPO) developed a Study Guide in Ophthalmology for Medical Students,[19] which has had an excellent reception by many schools. The seven objectives are presented.

The importance, relevance, context of use, and basic information fundamental for background in those seven content or problem subjects is provided. In addition, explicit references to four basic texts and the self-instructional units with self-assessment questions for each of the several problem subjects are also provided in this study guide, which has been explicitly constructed as a **guide** and not another text-book. In slightly over one year, 8,000 guides have been sold. Now about to be released in its second edition, this book seems to have succeeded in providing the framework for the student better to utilize the available texts, self-instructional units, and individual departmental programs.

SUMMARY

Medical student experience in ophthalmology has been changed and one would hope improved since:

1. Much of the basic curriculum content is available by consensus.
2. Learning theory, plus practical considerations, have played a prominent role in curriculum implementation.
3. Local ground rules, local practicalities, and local interests have been considered in the generic approach.
4. An easily modifiable, implementable educational plan utilizing a Study Guide, self-instructional units, and any of four available texts is now available for an inexpensive cost on a national scale.

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II. The Relationship Of Ophthalmology To Other Science Modalities

By Arthur H. Keeney, M.D., D.Sc.

It is an educational experience for each of us to join with the friends of Brown and to pull a few mutual oars. The challenges at Brown are good academic challenges — but very real challenges — and those of us who come from other communities are learning at the same time.

THREE PREMISES

I should like to emphasize three things. First, Brown is committed, without any question, to an undergraduate program in ophthalmic education. Second, Brown is committed to define and move, in a "starter set," to clinical residency programs. This commitment is probably not to complete replication of a large eye institute, while there is little reason to project duplication of a program with 11 or 12 accredited postresidency fellowships, inescapably there must be a clinical component. Third — and I say this with real advocacy — there is something especially related to Brown University: Brown's heritage, Brown's capability, Brown's unique geographic setting.

If we accept these three premises, then we must define the third one. What can be greater and better about the third component? That is what I like to call the Brown Ophthalmic Program. Obviously, there are some fluid interfaces that gingerly approach areas of separate domain. We have to approach separate domains with respect. Because such **domains** are important, I studied in detail in the last few days with Ken Roper, the last living ophthalmologist of the Dartmouth Eye Institute, the reasons why the Dartmouth Eye Institute closed. I would like to review briefly some possible parallels.

A LESSON IN DISPROPORTION

Dartmouth and Brown have many commonalities: they are intense academic institutions with tremendous history; they are relatively small institutions; they are institutions with tremendous pride; they have made scholarly contributions to this nation; they have launched small medical programs which have gone through some changes; and they now maintain highly individualistic medical schools. It is true that Mary Hitchcock Hospital at Hanover represents a very small community base; Brown is affiliated with seven voluntary hospitals and a VA hospital. But in the Thirties, the Dartmouth Eye Institute brought together good people, such as Walter Brackett Lancaster, who said "I'll leave Boston and go to Dartmouth," Herman Buriam, Arthur Bielshowski, and Arthur Linksz. These scholars launched a unique and successfuly program in visual physiology, binocularity, strabismus, motility, and similar problems.

They found it necessary, at the same time, to meet other obligations. Busloads of cross-eyed children were being brought to the Dartmouth Eye Institute, and they were crowding the schedule at the Mary Hitchcock Hospital. They entered what was basically **major disproportion.**

It became so bad that Dartmouth's president said, "One way we can stop this is by imposing a heavy financial tariff. We'll charge $25 for those fellows at the Dartmouth Eye Institute to see each patient, and we'll charge $400 for a strabismus operation. That will

Presented at a conference on The Future of the Visual Sciences, at Brown University, June 1 and 2, 1976.

ARTHUR H. KEENEY, M.D., D.Sc., *Dean of the School of Medicine and Professor of Ophthalmology, University of Louisville, Kentucky.*

contain them — they'll have some responsible patients, but that will cut off mass trade." Those of us who are ophthalmologists know precisely what happened — instead of cutting down the load, it increased, and the Dartmouth Eye Institute actually had more patients than before. They had so much more in financial reserves than any other department that they were able to call their own shots at Dartmouth in a very independent way. This posed a major problem to the Hitchcock Hospital, and the general surgeons didn't want all those cross-eyed patients glutting the schedule.

In an informal agreement between the officers of Dartmouth and those of the Eye Institute, a broad spectrum opened: the administration would be advocates for the Eye Institute, and the Institute could, more or less, move into any level of education appropriate to its staff and faculty, including graduate medical education and continuing education. Then they realized Dartmouth was an **undergraduate** medical school and didn't have any programs in continuing education or postgraduate education. Again they faced disproportion. The president apparently called in the director and said, "Doctor Lancaster, we said that you could have a major thrust, but here you are in postgraduate education and that is inconsistent with the programs at Dartmouth." Doctor Lancaster interpreted this as a breach of a gentlemen's agreement, that no wall would be raised around ophthalmology at Dartmouth. On the same evening, apparently, Lancaster called together all of his people and said, "It isn't the way we thought. There are unreal walls, walls that don't relate to the academic discipline but are artificial, and, therefore, I must withdraw. These are not walls that are raised by the scholarly body of knowledge which is ophthalmology." He would accept the wall which was the corporate body of knowledge, but he wouldn't accept an artificial barrier.

Here is a lesson in **disproportion** that must be accepted; here is a lesson in finance which must be accepted; here is a lesson as to where the walls are. It is essential that these walls be founded on a scholarly discipline rather than administrative expediency. At Brown, you have elected to keep wall-building to a minimum. Someday, you may find that's not cohesive, but, nonetheless, that is the program today. So the Dartmouth Eye Institute, with tremendous academic accomplishments, with a training program in the early Forties, crumbled, and all the good people left Dartmouth. There are many reports of how it grew and what it did; there are very few reports in the literature on how it closed.

NEED FOR A SPOKESMAN

Brown seems to be calling for a spokesman for ophthalmology or for visual sciences. You really need an ombudsman who will champion ophthalmology. I was surprised recently to encounter an explanation from a Brown faculty man — not an ophthalmologist — as to why it was essential for non-physicians to use prescription pharmaceuticals. As you know, there has been a controversy in Rhode Island about optometrists who succeeded in having a bill passed by the legislature permitting them to use legend, prescription drugs. If anybody is going to use prescription pharmaceutical agents, he should take a course in pharmacology and toxicology; he should live through drug reactions. I have personally encountered every reaction that occurs with all cycloplegics, mydriatics, and topical anesthetics, including syncope, grand mal seizures, and angle closure glaucoma. I haven't written anything about this, but I have accepted this responsibility even at midnight; non-physicians don't accept it at any hour. In fact, they are not confronted with these complications at all. But if a Brown faculty member is opinionated as to there being good reasons for use of prescription pharmaceuticals by non-physicians, such views should be a subject of analysis at the academic level. I gather it has not been, so far as this individual on the non-ophthalmic faculty was concerned. Brown needs an ophthalmic spokesman urgently; it needs to cyrstalize its ophthalmic roles and to move ahead.

Let's look at a few other fields in which you do move ahead. You do need physicians to speak as authorities on health. It is clear in our nation that the voice of the physician has been harshly challenged under the Capitol dome: "This is not the appropriate voice to speak on health," "medicine is too im-

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portant to be trusted to physicians," "the hazards of hospitalization." All of these phrases are used by the non-physicians. It is essential that Brown — and Brown is in a particularly good position with its classic tradition, its ethics, its religion, its philosophy — to assume the role of statesmanship in medicine and ophthalmology. The physician cannot rely on others to do this.

APPROPRIATE INTERFACES

Let's look at some interfaces that are singularly appropriate to Brown. Diagnostic ophthalmic ultrasound is in the forefront of clinical applications using piezo-electric engineering; ultrasound has become a diagnostic asset to ophthalmology. A simple contact transducer has rendered a complex field of engineering into everyday ophthalmic use. Here is an interface with engineers and physicists that is fascinating; If you learn what ultrasound can do, we in ophthalmology present a close relationship to ultrasonic behavior. We are deeply indebted to individuals such as Norman Pickering, who with Nathaniel Bronson developed the compact non-immersion scanner. Some astute ultrasonographers say ultrasound at different frequencies and different absorption rates may give a clinical histologic diagnosis. Carl Ossonig, who has worked with A-Scan ultrasound more than almost anybody in the world says, "I can tell a hemangioma from a malignant melanoma." Ultrasound is a field in which a union with physics, as strong as it is at Brown, and with an engineering division as strong as that at Brown presents great potential.

Also consider the question of magnetism; those concerned with removing exotic foreign bodies and alloys know this is a different problem. The Bronson magnet generates the highest magnetic force we can apply in ophthalmology, and even it is often inadequate. At the same time a good physicist says that superconductivity can produce a very useful supermagnet. Perhaps with one more logarithmic unit guage than the best we have today. By working with genuine authorities in this field, and not entirely in the commercial arena, this can be a stepping stone to major improvements in an institution such as this.

In the matter of electronic localization of foreign bodies, one of the most delicate detectors is the Roper-Hall-Moon localizer, a table-top unit which really is a small landmine detector. But it isn't very good in nonferrous and non-magnetic foreign bodies — in fact, it is a logarithmic unit inferior to the detection of comparable bodies when they are ferro-magnetic. Further engineering may greatly enhance the usefulness of such a device.

Consider some of the common commercial products on the world's market today. One commercial glass company tried to respond to the Defense Department in the 1950s by developing a phototrophic shield to protect the human eye against nuclear explosions. There were some plastic films marketed in the early 1960s that were poor, but this company, like everybody else in research here, has failed to come up with something fast enough to protect against nuclear explosions. Instead, they produced a commercial item that has been fascinating and increased the company's revenue by millions a year, because they market phototrophic spectacles as sun glasses. Perhaps this seems trivial, but they have been a huge asset to the company. I don't think they have been a great asset to mankind. They have a reverse thermal coefficient; they are great for skiing on a cold day, but won't darken inside an automobile and won't darken unless direct sunlight at 300-400 nm. reaches them. The warmer it is, the more slowly they darn and the more slowly they clear. They present a hazard to driving under mesopic conditions. They also present a special foreign body hazard, because this material contains very active ions: silver, copper, flouride, chloride, bromide, cobalt, and nickel. I thought perhaps the cobalt, being weakly magnetic, might enable one to pull this glass out of the eye with an electromagnet, but the answer is "No" — there's not enough cobalt to make these fragments magnetic. The leach rate of toxic ions from this glass constitutes a concern, and ophthalmic surgeons have to consider ionic elements when dealing with fragments of this glass rather than conventional crown glass. So, in a way, we can join hands with this company and say, "What's a better world for tomorrow?", and yet, at the same time, recognize the huge sales issue.

When there is poor x-ray definition of an orbital rim fracture, the roentgenologist uses a little spotlight to examine it and says, "Yes there's a fracture there." But in a xeroradiogram, one can easily see the double fracture in the orbital rim. Eeroradiography, however, as effective as it is and as competitive as it is with conventional radiography in cost, has one big problem: it requires three times the number of rays to produce an image. In a skull series or a mammogram, xeroradiography, although it has tremendous latitude in being able to detect high-density and low-density opacities, imposes an "environmental threat" by increased radiation energy. Here is a field in which ophthalmology treasures the image definition that xeroradiography provides as compared to conventional radiography, but we are constrained to say, "No, we'll put that aside because of environmental hazards." Brown can bring its considerable resources to bear on such problems.

ETHICAL AND MORAL RESPONSIBILITIES

Brown can lead in ethical and moral responsibilities in medicine. We are under tremendous federal and commercial pressures toward the deprofessionalization of medicine, and there is no better place to analyze some of these problems than in the halls of Brown. It is hard to define an ethical or moral standard; it's hard to prove that you have it, and you can't show that you are going to continue to have it. Furthermore, you have no evidence that it reduces the cost of hospitalization. These are difficult questions to answer, but Brown has a great capability to analyze and characterize moral and ethical standard in medicine. Pressures against ethical and moral prerequisites in the last two years stem from the Attorney General, the Federal Trade Commission, and the Food and Drug Administration. American physicians have not been attuned to these thrusts.

For several years the Bureau of Health Insurance, under the Social Security Administration, has been coming up with all sorts of definitions in medicine as to how many days of hospitalization a disease requires, and how often you as a physician have to do something. Often these are not academically derived decisions, but economically derived. We must weigh these economic decisions and balance them with needs of sick people. We have learned to live with some, but not with the next two or three I shall discuss.

Murray Grant, M.D., Ph.D. of the General Accounting Office has directed inquiries to the 23 specialty boards in the United States as to "how many specialists are you going to authorize and certify?" He has turned to the national organizations, and I expect him to turn next to the medical schools and say, "By what means do you justify the number of medical students in your school? How do you determine how many physicians are in your residency program?" The General Accounting Office, a creature of the Congress in the Fifties, entered medicine in a very unusual way at the end of 1975 and more aggressively in 1976. We have to formulate good answers to the Murray Grants of this world.

CAUTIONS

Some cautions: Brown has entered into a couple of programs that you feel are important approaches in rehabilitation and in social issues. Look carefully at what urban medical schools have done in rehabilitation and community medicine when they have become, of themselves, the agency of social change. The medical school or the university that is the vehicle of social change faces a very difficult future. I am not sure that we can do better or more than provide data, experimental models, research in the laboratory, and clinical research. When medical schools become the vehicle of urban change, history shows that many have become debtridden; some have gone into enormous operational deficits. We should say, "Are we going to be the vehicle? Are we going to be the data-gathering body? Are we going to be the prototype and model?" I strongly urge that Brown follow the course of institutions which have become information centers and resources, rather than public service bureaus.

I draw on my two major institutional experiences to emphasize commitment to disproportion. Both Wills Eye Hospital and the Louisville Eye Department are larger than necessary or proportionate to the usual medical school. Brown is a presold name of excellence, and you should not feel unduly comfortable that your senior students have secured good residencies throughout the nation. These are a presold group of fine peo-

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III. A Department Of Ophthalmology: A Personal View

By Steven M. Podos, M.D.

Although I am a neophyte department chairman, in the last five years I have had the opportunity to look at a number of ophthalmology programs throughout the country and to do a great amount of thinking about ophthalmology in terms of education, service, and research. Every department has its own idiosyncracies, of course, but — for the most part — the solutions can be generalized, and I wish to present a traditional view of the direction in which I feel a Brown Department of Visual Sciences should be aimed.

THE REQUIREMENTS FOR A DEPARTMENT

When I speak of specific requirements, I risk antagonizing a number of persons. I risk antagonizing the administration by saying that Brown must be willing to commit both space and money to make this program successful. I risk antagonizing chairmen of other departments by saying that ophthalmology is neither medicine nor surgery; it is ophthalmology, and it should be on an equal footing. I risk antagonizing the researchers because I believe there must be some integration — this is one of the major parts of the Brown program, and it is one of the strongest contributions the University has to offer. I risk antagonizing my colleagues in the ophthalmic community by telling them that they must also be a part of this program, that full-time individuals are as necessary as voluntary participants in producing a successful ophthalmic department, an academic department. There must be authority and control, and that will affect all of us. And, finally, I certainly risk antagonizing the hospitals by saying that they too must relinquish some autonomy in order to make the program function properly.

RESOURCES AND GOALS FOR A DEPARTMENT

Brown certainly has an exciting base to build upon. The resources are obviously excellent: talented and interested physicians and researchers in the community are a tremendous asset, and Brown has taken a unique step in sponsoring a seminar such as this in order to obtain a wide range of experienced opinion before establishing its department.

Obviously, I shall present my own biases, and one of the premises I shall emphasize strongly is that Brown must strive for a complete department in every sense of the word if the program is to be worth undertaking at all.

To begin, we should examine the classic goals, the traditional roles of departments: service, education, and research.

THE SERVICE GOAL

How will this department help with delivery of services? What problems are ahead? Certainly, ambulatory care is crucial. Both the government and the consumers are pushing in this direction, and rightly so. And this means more than merely a clinic population. What can a department accomplish for the community at large? Should we be going out into the community, to schools, and to areas where available medical care is not now as good as that which is received in the private doctor's office? I think a strong relation-

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Presented at a conference on The Future of the Visual Sciences, at Brown University, June 1 and 2, 1976.

STEVEN M. PODOS, M.D., *Professor and Chairman, Department of Ophthalmology, Mount Sinai School of Medicine of the City University of New York, New York.*

ship with community medicine depends on such an active department.

Another subject which should be examined is the university type of pre-paid health-care packages. I believe ophthalmology has an important role to play in this area, as do all other clinical departments. How will this interact with the ophthalmic practitioners? It cannot be a competitive force, for that would be disruptive. But taking care of more people certainly is one important aspect of service.

Better care of the patients already being seen is another aspect. While excellent care is available in the community, there still are certain additional benefits which a department could provide: new techniques, concepts, and instruments which are not available elsewhere. Some of these will stand the test of time, and some will not necessarily be available in every community: vitrectomy, static perimetry, lasers, placoemulcification, lens implants, and new experimental drugs. These should be available to the community at large only through the auspices of those who are doing research in these fields.

Other new services should lead to better care of patients — expertise in the various subspecialties, for instance, which is an integral part of every department. This expertise does not require only full-time people. In large departments, it can be found within the academic institution itself. This is not true at Brown, and perhaps never will be, so the talented clinician who is predominantly in private practice should also have spheres of expertise which can be utilized.

THE EDUCATION GOAL

Education is the second side of the triangle. In education, the entire gamut of ophthalmic education must be considered — all of the people who take care of patients or who are involved with research in the ophthalmic sciences.

The type of education received by ophthalmic assistants varies at the present time. Yet, ophthalmology has a long tradition in the use of ophthalmic assistants — they are very necessary when there are a limited number of practitioners with a limited amount of time. The physician should do only those things he is specifically trained to do, with others performing those additional functions which are so time consuming. An ophthalmic department needs physicians' assistants. The questions which arise are: How many? What are they going to do? What are the state laws with respect to assistants? Who is going to train them? Should they be trained within a department or elsewhere?

I think there must be a mandatory rotation for medical students through ophthalmology, which certainly is not the present situation across the country. Part of that is didactic. We know that there are a number of so-called basic sciences which must be taught to the ophthalmology resident and the medical student. But who will teach them? I believe there is sufficient talent within the community to do this, particularly with the utilization of full-time persons. It requires elements taught in the various sections of the basic sciences, a cohesive unit of lectures followed by a mandatory clerk ship, and the opportunity for electives for those who are interested in pursuing ophthalmology to a greater extent.

The resident situation really is the backbone of any department of ophthalmology which seeks to provide stimulation and interplay among the various elements of the department. Residents are necessary for service and for teaching. They also are necessary to interact with both full-time and part-time staff, because they provide a stimulus for the staff itself to learn.

But how many residents are needed? The present trend indicates that too many residents may be trained, that we may be replacing ophthalmologists more quickly than is necessary. The number of new ophthalmologists really needed isn't totally clear at this point, but I do not feel that Brown has yet reached the "critical mass" in terms of its resident training. To make this a livable and productive program, the residency program here should be increased from three residents to six — and I think there is sufficient clinical material in the community to support that sort of residency program.

What kind of training should be given? Are residents to be trained as clinicians or as academians? I think that separation should not be made; Brown should be training doctors who are proficient in either field, and that takes very similar training. It does,

however, demand a great deal of commitment from full-time faculty, from voluntary faculty, and from the basic research resources. The training requires didactic lectures and rounds.

In some programs, the resident goes elsewhere to take one of the basic science courses. While these may be very good courses, I think there is a problem inherent in this approach: the courses are given in a single period of time that may not be appropriate for that particular resident, and thus the knowledge gained is not integrated within the total training picture. A far better way, if there are resources to accomplish it, is to integrate basic science and clinical training into the total residency, carried out by individuals in the academic community. This can be done through a series of lectures and use of the home-study or continuing education course in ophthalmology.

Journal clubs are needed; rounds are essential. A visiting professorship program is helpful; otherwise, any training program can become very insular. Bringing in a professor for two or three days, cancelling all other activity except emergency care, and having the visiting professor deliver lectures and interact with students on a one-to-few basis should be part of any teaching program.

A second consideration in resident training is surgery and patients. Patient material is essential in training doctors. The clinical system has provided this material in the past, to a great extent, and will continue to do so for a period of time. But I fear that this period of time is going to become shorter and shorter and that we shall not find adequate patient material within the clinic system because of national health insurance, second or third-party payments, or other plans. I am afraid, then, that future doctors may not have received adequate training during their residencies.

What sort of contingency plans can provide more patient material for the training of new residents? Here, the department can become crucial. One alternative lies in an active full-time staff who are seeing interesting patients, predominantly on a consultative basis. These patients can be utilized in training. Another aspect of this alternative is having active dedicated voluntary staff willing to do the same thing. Granted, this approach can be difficult — to ask the physician to turn over patients, for whom he has responsibility, to the care of a resident in some degree. This is particularly true in the absence of the academic "umbrella," but I am convinced that it will become necessary.

Consultation involving patients of other services also is helpful and should be bolstered. And another alternative is to send residents out of the country or to areas where there is no training program. But this is not good as an alternative unless there are very fine persons in those areas who are willing to do the teaching; just allowing a resident to perform a hundred cataracts with no one looking over his shoulder is not going to teach him adequately.

A third aspect of resident training is the necessity of having persons on the full-time and part-time staff who are particularly knowledgeable in the subspecialty areas, and who also are good teachers.

The fourth element is contact with other services. There is nothing worse than the individual who goes into ophthalmology forgetting that the eye is in a body and that there are things going on elsewhere in that body, who loses interest in and knowledge of other diseases, and who forgets that he is dealing with a whole individual. Thus, it is essential that the leadership of the program in ophthalmology be cognizant of what is happening elsewhere, not only in the clinical but also in the basic sciences.

Finally, I think there must be elective time for residents. The elective can be research. I believe that research should not be compulsory; but with an appropriate staff and milieu the resident will want to get involved, and certainly he must be exposed to research.

Fellows and graduate students are still another integral portion of this picture. The type of fellowship and the type of training for graduate students obviously must depend on the nature of the staff at that particular time. It is ideal if the program is large and every subspecialty has a fellow, but this certainly is not essential. There must be some post-residency individuals in training. They add to the teaching of the resident; they interact with the rest of the staff, the resident,

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and the medical student; and they help create a more stimulating intellectual environment.

The fifth element is postgraduate education, continuing education. In ophthalmology we are fortunate to have a group of dedicated individuals interested in continuing education. They have provided us with core curricula, with an ophthalmic knowledge assessment program and with an examination which all ophthalmologists should be taking to locate soft spots and to harden them up.

But what about the department itself and what the department should do at Brown? Postgraduate courses are important, both to teach and to learn. These courses can be held in a number of fields, depending upon the particular interests of the participants, but they require active and interested full-time persons, voluntary participants, and basic researchers who have some knowledge to impact as well as to gain. I think it is necessary to go one step further, however, in postgraduate education: the department must be recognized as a team effort, so that everyone comes to the rounds which are such an important part of postgraduate education.

When the department has full-time individuals with expertise, they can serve in a teaching as well as a service capacity. They are available for the problem cases of the community, and this should be reflected in a certain amount of education of the physician who has sent in his patient.

And, there are some innovations which may be carried out. One such is to bring practitioners back into the program as part of postgraduate education, to take a "residency" again. This can be designed to meet the needs of that particular practitioner who may not have looked at a retina for a while, or who wants for example to become more involved in what is happening in regards to the cornea, or any number of other situations. The logical next step is to send out senior residents to cover the practices of the participating physicians while they are within the institution — but this, of course, requires great confidence in the training program.

THE RESEARCH GOAL

The third side of the triangle is research, as important as the goals and solutions of a department. In a recent issue of the **New England Journal of Medicine,** Arthur Kornberg was quoted thus: "I hear it said that the primary function of a medical school is to teach medical students. How tragically sterile an outlook that is. Of course, the medical school must, like other technical schools within the university, prepare students with the basic knowledge, skills, and experience to be fully qualified practitioners. However, the central mission of a medical school is to advance the knowledge of medicine and to imbue students with this spirit. By asking probing and penetrating questions to challenge a current dictum, we train the physician who will be attentive to new knowledge and to whom you and I would entrust our families."

Basic research and clinical research both are important. They are important in a clinical department such as ophthalmology, yet it is somewhat rare to see it. This must be available, encouraged, and supported. Ophthalmology is uniquely suited, not only for this kind of collaboration, but also to support it financially — support which will be essential if funds become more difficult to obtain from other sources.

How can an interaction be promoted between the basic scientist and the clinician? I think this depends on individuals who can work successfully in either role, and that sort of interaction is important. There are too many programs in which fine basic research is going on within a department of ophthalmology and fine clinicians are teaching residents — with absolutely no interaction, or very little, between the two. Interaction can be within the department, it can be between two persons in the department, or it can be among individuals in various departments.

Why is such interaction valuable? Discovery is one reason, but it is also essential to training. The half-life of medical knowledge acquired in medical school is at best about ten years. It is necessary to train individuals who will want to maintain what knowledge there is at that particular time, who will continue to read the new literature and evaluate it. This entails an exposure to research. It does not require a person in residency to do research in a laboratory or to perform a clinical project, but it is essential that the

individual be able to evaluate the content of the morass of material which crosses his desk and will continue to do so as long as he is a practicing physician.

Finally, research is essential in attracting appropriate faculty at every level. If the department is actively productive in research, it will be much easier to attract and retain individuals the department wants, whether they be clinicians, basic scientists, or both.

ORGANIZATION, SPACE, AND STAFF

The obvious needs are space, personnel and money.

You need a department in the classic sense, not a portion of some other program, even at the beginning. For if it is a portion of another program initially, it will be virtually impossible to obtain the appropriate type of individual needed to head the new program. The autonomy of a department is necessary to develop quickly and well, to appeal to top-level individuals, and to attract funds.

The organization must be centralized, not diffuse. There should be an organizational structure laid out at the very beginning, and this should include research. The mix of research and clinical functions is essential to both training and staff stimulation.

Concerning space, there should be a central base, preferably where the greatest resources are available. By "greatest resources" I have in mind out-patient and in-patient services and research. Certainly, it would be ideal if everything were located at a single site — going from one institution to another is counter-productive.

In addition, there is need for a private out-patient facility. I view a full-time faculty as seeing patients, not in competition with the private practitioner, but to provide a necessary service. It will provide patients and more surgery which are needed to train residents, and it will provide a service to the ophthalmic community at large through the special expertise that these full-time staff members will offer. Also, it will provide a source of income from patient care and by donation, important to building and running a department.

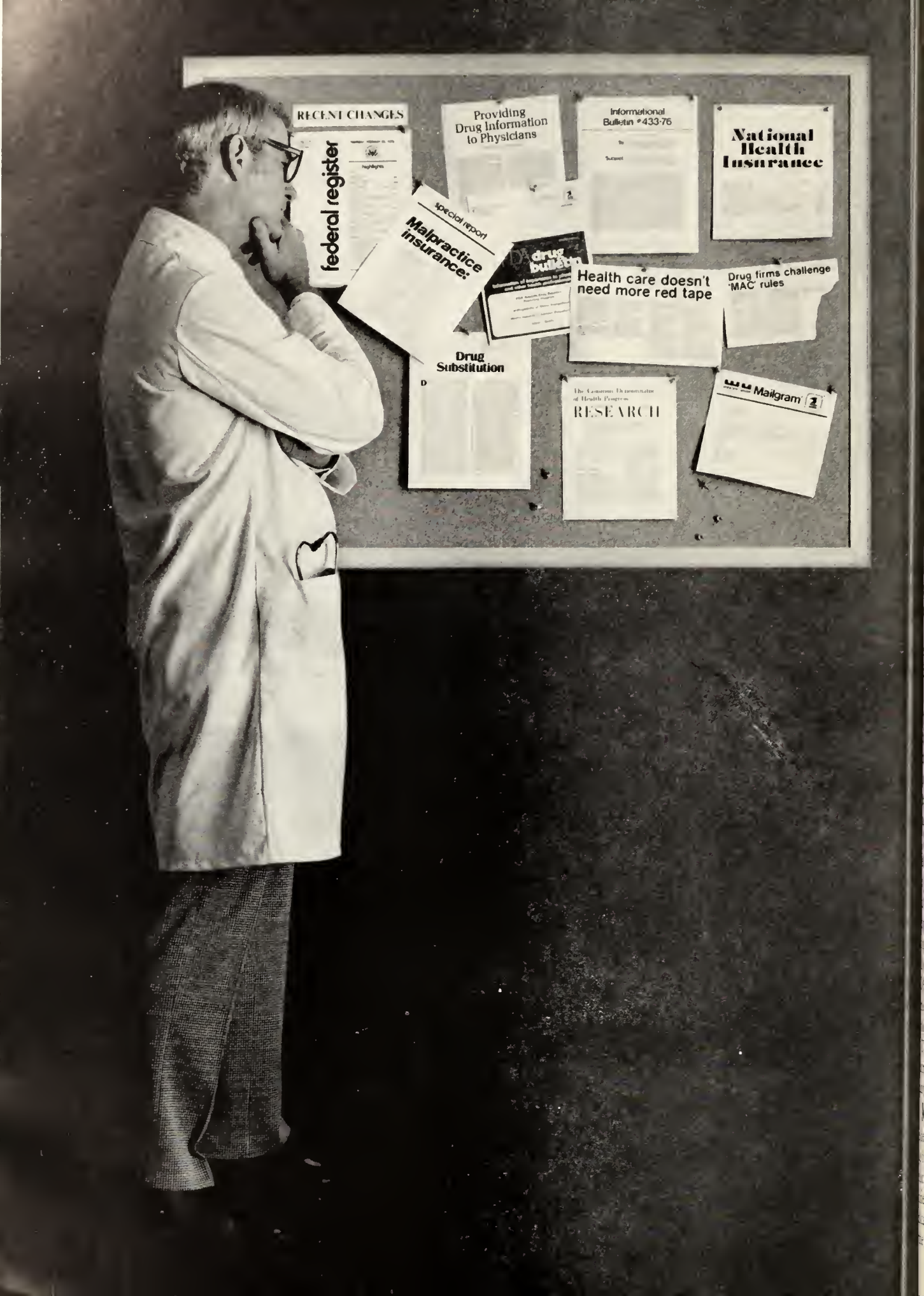
Obviously, other space will be needed. Without laboratory space, grants will not be available, and grants are essential to support a department and its research as well as to attract faculty.

Administrative space will be needed to run the department. Certainly, each full-time person must have an office, and there must be a place for the central organization of the department.

Beds and operating room time will be required, and I know that is a problem. There are only a limited number of beds and limited operating room time. This implies that a commitment must be made to provide additional beds and time, not an easy problem to solve.

How about staff? There are three categories, equally important: full-time, the attending voluntary, and the researcher. I would view Brown's situation as requiring a full-time chief of the department, a chairman of the department in every sense. This person should represent a chief of service, not just an academic chief, but a chief of service for the ophthalmic community — a chief of service at the various hospitals, a person who has ultimate authority for faculty appointment. In the matter of clinical stimulation, a chief and full-time staff are needed to bring in patient material and to provide subspecialty expertise and consultation for the community and for teaching. In research the chief and full-time staff must have more time to work than does the clinician, have prime interests in research, know the literature, keep pace with it, know the individuals in the community with whom to collaborate, and be cognizant of what is going on outside of ophthalmology. And, certainly, the chief is required for financial administration, the running of the department. To a large extent a department can become self-supporting, but not completely — it needs the help of the parent organization at the beginning and even continually later. Every institution and every department has a different "mix" in its sources of income, but ultimately some 70 to 75 per cent of income will come from grants, donations, and patient care. Money must be provided to support other faculty members initially. One full-time chief cannot do the job here unless he has the capability of bringing in at least one or two other per-

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RECENT CHANGES
federal register
Providing Drug Information to Physicians
Informational Bulletin #433-76
National Health Insurance
special report
Malpractice insurance:
drug bulletin
Health care doesn't need more red tape
Drug firms challenge 'MAC' rules
Drug Substitution
RESEARCH
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THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all nds of scrutiny. Your control over patient therapy is king monitored, judged and occasionally abrogated, metimes by unknown third parties.

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Drug substitution In most states, pharmacy laws, gulations or professional custom stipulate that your on-generic prescriptions be filled with the precise prodcts you prescribe. But in the last five years, a dozen or ore State laws have been changed, permitting the pharacist in most cases to select a product of the same neric drug to fill any prescription.

Ironically, this dilution of physician control has ken place against a background of growing evidence at purportedly equivalent drug products may be inuivalent, since neither present drug standards nor their forcement are optimal. In fact, the FDA itself says it s not enforced the same standards for hundreds of llow-on" products that it had applied to the original DA approvals. Thus physician control over patient rapy is being eroded with a risk that patients may be posed to drugs of uncertain quality.

The major advertised claim for substitution is reduced scription prices for consumers. Yet no documentation any significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is ederal regulation designed to cut the Government's ug bill by setting price ceilings for drugs dispensed to edicare and Medicaid patients. Unless the prescriber tifies on the prescription that a particular product is edically necessary, the Government intends to pay only the cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

It could make a difference in your practice tomorrow.

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IV. The Future Of Ophthalmology

By Carl Kupfer, M.D.

I am aware that we have a quite varied group of individuals in the audience, who represent the full range of the biomedical spectrum. We have distinguished investigators who have committed themselves to basic research and to the improved understanding of fundamental mechanisms. We have clinicians who are concerned with bridging the gap between what is done in the laboratory and what eventually will be applied to the improvement of diagnosis and treatment of patients. And we have practitioners who are responsible on a day-to-day basis for diagnosing and treating patients according to the best of their knowledge and skills.

This spectrum of biomedicine is now under close scrutiny at various levels in our society. As an individual who regards himself still as a member of the university community, but who has spent an amazing six years observing the Washington scene — trying to understand how things are done and why — I should like to try to convey my view of the current thinking at the national level concerning the future of medicine.

IN THE IMAGE OF MEDICINE

Although the title of my talk is "The Future of Ophthalmology," there is no doubt that ophthalmology today reflects the problems and concerns of medicine in general.

The increased interaction among all specialties in medicine today has underscored this fact. My remarks, therefore, will deal more broadly with medicine in general and, in particular, about research and its role in medicine today. I also shall discuss the question of federal responsibilities in the support of research and whether it should extend beyond its traditional boundaries.

I think it is especially appropriate at this time to attempt to look into what the future may hold concerning these questions. Doing this 10 years ago would not, perhaps, have been so worthwhile; at that time there were no clearcut indications as to the direction in which medicine was going to move. But many thing have happened in the past decade. There has been a tremendous increase in the rapidity with which new diagnostic techniques have been developed. One has only to think of the EMI scanner and the so-called "CAT fever," which has been the subject of a much-discussed editorial in the **New England Journal of Medicine,** to realize that there has been a veritable spawning of new diagnostic techniques which, although capable of giving new insights which may enable the practitioner to improve care and therapy, contribute significantly to the increasing cost of health care. In ophthalmology one can point to ultrasonography, which has in a short time become a diagnostic technique routinely employed not only in a number of tertiary eye-care centers, but also in many ophthalmologists' offices.

There also has been an increase in the rate of progress in developing new modes of treatment, and there is an increasing demand to subject them to evaluation in scientifically-designed clinical trials before they are widely applied in clinical practice. We have seen very rapid development, for instance, in determination of the appropriate treatment of carcinoma of the heart, which has supplanted the more empiric treatment of only 5 or 10 years ago.

Presented as the 1976 Brown Medical Association Lecture at a conference on The Future of the Visual Sciences, at Brown University, June 1 and 2, 1976.

CARL KUPFER, M.D., *Director, National Eye Institute, National Institutes of Health, Bethesda, Maryland.*

In ophthalmology the initial findings of a very successful clinical trial of the use of photocoagulation in the treatment of proliferative diabetic retinopathy were reported just a few months ago. This represents a major step forward since it provides the first conclusive evidence of the value of this widely-applied therapeutic technique.

Progress also has been rapid in research on basic mechanisms, thus increasing the possibility of finding means of preventing disease. There is, for example, increased interest in vitamin A metabolism. The cell biologist tells us that vitamin A may be directly involved in the malignant transformation of cells and that there are vitamin A receptors in cells of the cornea and retina. It is very apparent that these two pieces of information have extremely important implications to clinicians concerned with the prevention and treatment of cancer on the one hand and on the other with the prevention and treatment of keratomalacia, which, as you may know, is the major cause of childhood blindness in the world, and to elucidating the etiology of retinal degenerations, which probably are linked with the utilization of vitamin A.

The enzyme, aldose reductase, which was first identified as a major factor in the development of experimental diabetic cataract, later was implicated as a possible factor in diabetic neuropathy. Currently the same enzyme is being studied for its possible role in the pathology of the small vessels of the retina in diabetic retinopathy.

It is obvious from these examples that, if we know what the defect is in a particular disease, the likelihood of developing means of preventing or at least ameliorating its effects is increased. In case of experimental animals made diabetic, cataractogenesis can be slowed significantly by the application of inhibitors of aldose reductase in the form of eye drops. Had I stood here 10 years ago and said that there is a possibility of using eye drops to inhibit the rate at which cataracts develop, there would have been laughter in the audience or, at the very least, polite murmuring — and appropriately so. But, it is certain that we are now preparing the way for an eventual clinical trial of topical agents capable of slowing down the development of cataracts in diabetic patients. These few examples, I think you will agree, illustrate that the rate of discovery in ophthalmology and biomedicine has increased remarkably.

Because things are moving so rapidly, I think it is incumbent on us to try to look ahead and make some predictions as to the course of future events. We may not be able to affect the direction of these events, but we certainly can influence the form they will ultimately take.

First of all, we should recognize that in recent years there has been a major change in the attitude of the federal government, both in the Executive and in the Congress toward biomedical research. The key to this attitude is a word that we have heard a number of times during the last two days: accountability. Increasingly, Federal health programs are being held accountable for what they do. The administration, particularly through the Office of Management and Budget, wants to determine the optimal ratio of resources that should be invested in medical activities — how much for research, how much for health care, how much for manpower development. Even the National Institutes of Health, which has long enjoyed the unquestioned support of Congress, is being asked increasingly by that body what the nation has received for the millions of dollars that have been allocated for health research.

In recent times research dollars have come under particular scrutiny by both the administration and the Congress, because these sums of money are controllable. They represent a significant portion of the "non-fixed" costs in the HEW budget, about 85 per cent of which is in fixed or non-controllable costs. There is very little, for instance, that the Congress or the administration can do to reduce that part of the budget which goes for Social Security payments or outlays for Medicare or Medicaid; but the programs of NIH, as well as those of the other medical health agencies, are vulnerable indeed when it comes time to cut the budget.

Therefore, both the Congress and the administration want to know what the American people are receiving from these large expenditures of money every year. Of course, I needn't tell you that the public itself is

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very concerned with this question. And I think the medical community, too, wants to know what impact research is having on the practitioners' role in providing patient care.

One way in which we can increase accountability is to engage in systematic planning, that is, determine major needs and set priorities. At NIH the National Heart, Lung, and Blood Institute, and the National Cancer Institute have specific legislated mandates to develop comprehensive program plans. Although without such a mandate — but anticipating the need — the National Eye Institute, together with its senior advisory body, the National Advisory Eye Council, in 1974 embarked on the development of a plan for vision research. This plan has been published and widely distributed to researchers and practitioners, to the Congress, and to administration officials. After only 14 months the plan already has had a major influence on shaping the future of our programs. It is proving to be a great help in guiding the efforts of the National Eye Institute toward projects which are scientifically promising and which are most likely to give the public the best return on its research dollars.

A second great concern in national health policy today is the question of whether the role of the National Institutes of Health should be broadened and, if so, how it would interact with the role of other segments and programs of the Department of Health, Education, and Welfare. NIH has earned a fine reputation for its conduct and support of biomedical research, both through extramural grants and contracts, as well as in its own intramural research programs.

Historically, the primary mission of NIH has been to promote the acquisition of new biomedical knowledge. Until quite recently, however, NIH had no great concern with what was done with this knowledge: how it **could** or **should** be translated into improvements in the prevention, diagnosis, and treatment of disease. However, during the past two years, NIH has become increasingly involved in discussions of such questions, and it is very apparent that Congress is looking to NIH to expand its programs into that part of the biomedical spectrum which lies between biomedical research and direct provision of medical care.

The boundaries of this zone, however, are far from clear, and even within it there are various subsections which seem either more or less feasible for NIH to enter. One can look first at those concerns closest to biomedical research which, intellectually at least, would not require a broad departure for NIH from its traditional role. One then can look at activities much farther away from the present NIH mission which would require a major extension of current programs. I should point out that, when other organizations have tried to enter this intermediary zone and effect a bridge between research and service activities, disastrous consequences often have ensued. If one thinks back to the Chronic Disease Control Program of the Public Health Service and, more recently, to the Regional Medical Programs which are supposed to fill the gap between research and patient care, one can understand why NIH views expanding its own programs into this sphere with some trepidation.

A DEVELOPING RATIONALE FOR CLINICAL TRIALS

One activity, however, in which I can think NIH quite naturally can extend its role without necessarily compromising its commitment to basic research is that of clinical trials. Clinical trials lie on the border between research and its direct application to clinical problems. They also hold significant implications for the setting of quality standards to health-care delivery. Clinical trials offer medicine the opportunity to reduce reliance on empiricism alone in clinical diagnosis and treatment by providing sound, scientifically-derived information.

During the last 20 to 30 years, as a result of methodology first applied in England, a code of techniques to conduct controlled clinical trials has evolved. Such trials apply those basic aspects of scientific investigation which, thought routine in the laboratory, have not been widely applied in clinical research. These include randomization, the use of matched control groups, means of eliminating investigator bias, and other techniques which help make it possible to determine in a scientific manner the safety and efficacy of new forms of diagnosis and therapy. All of these techniques, of course, are applied in a clinical setting which stresses above all other concerns the ethics of working with human subjects.

Most of us can recall, I am sure, a number of procedures commonly practiced only a few years ago which were developed and used extensively without benefit of rigorous testing but which ultimately faded into well-deserved obscurity. One can cite the use of the portocaval shunt for treatment of cirrhosis of the liver, the freezing of gastric ulcers, and the use of sympathectomy for the treatment of hypertension. In the realm of eye diseases, there was the widespread use of hypophysectomy in the treatment of diabetic retinopathy and the employment of a variety of drugs for the treatment of macular degeneration.

Of course, medicine is not the only field of human endeavor in which it has been believed that if an idea or technique is **new** it is invariably **better.** Happily, in medicine at least, such ideas are changing for there is increasing recognition that if the quality of health care is to be improved, approaches which are both scientifically and ethically sound must be made to questions concerning what techniques truly are in the best interest of the patient.

We shall, therefore, see a marked expansion in those types of clinical research programs which stress rigorous design, along with the highest level of ethical concern. Although the multi-institutional clinical trial is the most dramatic and visible of such activities, other types of clinical research which will be given renewed emphasis include case control studies, natural history studies, correlational studies, and instrumentation development.

If we now consider movement farther along into the intermediary zone between research and service and away from biomedical research, we come next to demonstration and control programs, activities which have great popular appeal for their capability of providing a showcase within the community of the optimal use of a particular diagnostic or therapeutic technique or an entire health care delivery system. At NIH, the National Cancer Institute and the National Heart, Lung, and Blood Institute are the components most involved in such activities at present. Ideally, NIH would like to limit its support of this type of project for a fixed period, with the understanding that the state or local government would subsequently take over responsibility for its funding and administration. However, the mechanism for assuring that this transition will, in fact, occur has yet to be worked out.

Moving still farther from biomedical research, the Congress has expressed on a number of occasions that it would be desirable for NIH to develop a research base upon which an improved health-care delivery system could be constructed. There are, of course, many problems with this concept. One is that only some of the questions concerning improvement in the delivery of health care are medical in nature; there are many others which are economic and social. Therefore, whether NIH is the appropriate organization to undertake comprehensive investigations in this complex field is not at all clear. In addition, another important aspect of the quality of health care is manpower utilization, an issue which has not been looked at in a critical manner.

MANPOWER — NUMBERS AND NEEDS

As you know, all specialty boards are being approached by the General Accounting Office, the investigative arm of Congress, which is inquiring about the basis for certification of specialists, projections for needs of specialists in the future, and existing procedures for regulating the number of specialists. Very soon these questions will be asked concerning residency training. Eventually attention may even be directed at the medical school level of training, and previous attempts to regulate the number of general practitioners being trained may be resurrected. Medicine does not have the hard data which could indicate the minimal requirements for medical personnel necessary to maintain the present high quality of health care. Nor are there any systematic efforts under way to get this information, which could at least demonstrate to the Congress and to the public that the medical profession is concerned with this issue.

The optimal utilization of allied health personnel is another goal toward which progress is being made erratically and very slowly. Ophthalmology provides a superb opportunity to address the question of the proper configuration of health-care delivery involving the physician and a variety of personnel.

I also should mention that not the least of

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concerns today is the skyrocketing cost of medical care, an inescapable issue when one is considering the total picture of quality health care. Here, one basic question to be asked and answered is the appropriate level of care to be given to an individual to assure maximal quality with minimal economic cost. Of course, questions relating to various proposals for national health assurance continue to be discussed, and I am sure that some resolution of these questions will be forthcoming in the not-too-distant future.

CENTERS OF EXCELLENCE

In addition to increased accountability and extension of the federal role into the zone between medical research and health care, there is a third major focus of current interest in health at the national level. This is the concept of "centers of excellence" or specialized tertiary care centers located in the various geographic areas of the United States. The usual purpose of these centers is to enhance the interaction between the basic scientist and the clinical investigator and actively disseminate health information to practitioners and to the public.

The problem with this concept is the effect that establishing a large unit — say for cancer, cardiac research, or diabetes — has on the university community, which is set up along different organizational lines. Despite such problems, it is clear that centers of this type are going to be set up — indeed they are already being set up. In fact, the National Institute of Health sees such centers as a valid opportunity to gather together in one place a variety of resources which can be utilized for maximum efficiency. A number of support mechanisms, for instance, can be used — research project grants, training grants, core center grants, clinical center and categorical interdisciplinary research support grants, and contracts — to support a broad array of basic and applied research.

I think that, despite the drawbacks associated with this concept, there are tremendous pressures by both citizen groups and the Congress, as well as by many in the medical community, to move in this direction.

CONCLUSIONS

What, then, can we conclude from this brief look into the future? First, I think we can say with certainty that medicine is under close scrutiny by the various segments of the government and the public to a degree it has never experienced before. Such scrutiny is directed in part to the question: "Are we receiving the highest quality of care for the two plus billions of dollars each year that we spend in research to improve this care?" If we cannot develop a coherent program to address these questions, I think it is safe to say that there will be some intervention by government, either on the federal or state level, to do so.

Second, there will be increasing pressure to extend the federal presence in the gap between research and the application of new knowledge to the benefit of patients. This will take the form of clinical trials and other forms of applied research, demonstration and control programs, health education programs, and the establishment of specialized disease centers. The future role of NIH and other existing health programs in this endeavor has yet to be clarified.

The third conclusion is that there must be a research base on which an improved health care delivery system can be structured. Otherwise, the quality of care given to patients will be compromised, costs will continue to rise, and health-care delivery will become increasingly inefficient. Yet, there is no evidence at the present time from where in government or in the university sector this type of information will be forthcoming.

Finally, I think we can conclude that the medical community, either at local or regional levels or nationally, must begin to take the initiative in organizing and taking advantage of increased funding and other resources that will be made available in these new areas of emphasis. Whether these be for clinical trials or experiments in health-care delivery, the medical community itself must be ready to provide leadership in determing what shape this system will take. It is, after all, the medical community which will be most directly involved in functioning in this new environment; and it will be our patients who will be receiving the care provided.

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References:
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V. The Visual Sciences At Brown University– One Possible Approach

By Harold F. Spalter, M.D.

We want to organize and equip a Section of Visual Sciences at Brown University which will benefit the State of Rhode Island, the medical students, the ophthalmic residents, ophthalmic practitioners, and visual scientists of today and tomorrow. I propose a rationale which highlights the immediate demand made upon the medical planners and practitioners of today for the expected medical performance of tomorrow.

We must start by recognizing the inescapable influences on the future of the health-care delivery system; this, of necessity, means taking a broad new look at the training experiences of both teachers and students. The ophthalmic practitioners will be responsible for this training and, equally, will be the beneficiaries of the continuing medical education. This is the continuing medical education which all twenty-two medical specialty boards of the United States are soon going to demand of all practicing medical specialists.

The American Board of Medical Specialties, representing twenty-two specialty boards, has developed guidelines for recertification:

1. That recertification should assure periodic evaluation of the physician's continuing competence in his chosen field of specialization, and
2. That recertification should encourage certified physicians to continue those educational activities essential to the maintenance of competence in their specialties.

Following these pronouncements, the American Board of Ophthalmology published similar guidelines:

1. The recertification process of the American Board of Ophthalmology will be established following central evaluation of all potential components including continuing medical educational programs of various types and hospital related instructional programs.
2. Examination procedures such as a written examination to relate to a published curriculum emphasizing core knowledge and reflecting the physician's subspecialty interest will be developed.
3. Methods for assessing professional performance in actual ophthalmic practice will be established.

Could this mandate be clearer? The premises on which continuing education, which is our professional lifeline of the future — the yardstick of our competence, our mechanism for achieving recertification — are strikingly clear. These recertification processes have been promulgated because expanding medical knowledge, diagnostic methods, medical therapy, and surgical procedures are undergoing continual refinement. The rate of scientific advancement is so rapid that the half-life of new knowledge in ophthalmology is five years. So, if we assume a working life of thirty years, ophthalmologists who are thirty years old or younger can expect to be required to demonstrate professional competency from three to six times during their professional careers.

The second premise on which the mandate for continuing education is based is our ever-increasing accountability to the public. In the final analysis it is the general public that subsidizes medical education, pays for medical services, and is the recipient of medical care. The public is demanding that the

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Presented at a conference on The Future of the Visual Sciences, at Brown University, June 1 and 2, 1976.

HAROLD F. SPALTER, M.D., *Associate Professor of Ophthalmology, Columbia University, New York.*

care be of optimum quality. Proven continuing medical education is designed to insure that such a demand of the public is met.

Finally, both state and federal government are expressing continuing and ever-increasing interest in all aspects of medical services and health care delivery. The government is particularly interested in how the products of the publicly subsidized medical education system perform throughout their medical careers. Big Brother is definitely beginning to cast an enquiring glance at all of us.

How unique, then, is the opportunity for us to fashion a responsible education system for ophthalmology in Rhode Island for the present and the forseeable future? I submit that — commencing with the medical school undergraduate level; through residency, post doctoral and subspecialty training; and into graduate research activities — the opportunity is here to draw up a responsible blueprint for the future of the visual sciences in this tight little island. This blueprint is to incorporate the natural locus of medical education. That natural locus must be the university, with its core knowledge offered by the biosciences program for the undergraduate medical students and the graduate ophthalmic scientist, be he clinically or research oriented. It incorporates the foundation of a 200-year-old university, with its deep roots of academic excellence, with the blueprint superstructure of the affiliated hospitals offering definitive ophthalmic medical care for the community of Rhode Island.

The plan can only exist with full participation of the practicing Rhode Island ophthalmologist, who will give of his time, clinical expertise, and administrative know-how to nurture and sustain this newborn department. While the practitioner is helping this infant grow, he will at the same time create a mechanism for maintaining his own competency and clinical excellence in the face of expanding medical knowledge — a mechanism for remaining visibly accountable to the public, a mechanism for remaining responsive to the ever-increasing burden of federal and local government action.

To find means of accomplishing this with the limited assets of the University and the ill-defined relationship between the University and the professional community of Rhode Island ophthalmology is my purpose. This is a plan providing some answers but certainly not all.

The framework of the department must be erected with maximum effort and minimal cost. Let's make a start with a shell to experiment with, to argue about, before finishing the interior floor plan and before providing the costly furnishings to complete our ideal Brown-Rhode Island house of ophthalmology. Yet, this shell should be erected here soon; it is needed to provide an initial shelter for all prospective inhabitants for at least the next five years.

From entry into the visual sciences program for the medical student until departure of the fully trained chief resident in ophthalmology or postdoctoral subspecialty fellow, tremendous dependence must be placed on the voluntary faculty. In the most recent (1975) evaluation of faculty distribution in Brown's Division of Biological and Medical Sciences, only twelve per cent of the faculty were campus-based; only twenty-five per cent were hospital-based. Of faculty appointments at the level of instructor — the level at which so much clinical information is provided in the preceptorial system vital to the teaching of clinical medicine and surgery — 175 of the 199 persons holding the title of instructor were voluntary or visiting faculty. This is the medical school's current main manpower resource and will remain so for the next five years.

The voluntary faculty in the visual sciences must contribute an adequate number of hours, then, for teaching all medical students. There also must be available a two to three month ophthalmology elective. Perhaps this should be given to third-year medical students and include exposure to the general eye clinic, specialty eye clinics to be set up, the operating room, and preceptorial time in the voluntary faculty members' private offices. There should be sufficient time and exposure in this elective to acquaint the student with basic research opportunities in the visual sciences; this would permit a limited number of students to spend three to four months in a research laboratory project in their senior year with the core faculty in the visual sciences on campus.

To supervise the departmental teaching ac-

tivities for the medical student there should be a standing committee on medical student visual science curriculum, consisting of three visiting clinical faculty and three campus-based core faculty. Each of the faculty should participate in the initial decisions regarding clinical curriculum content which they will be teaching. They should elect representatives on the standing committee of the curriculum to represent their views for a yearly inspection of the ophthalmic program for the undergraduate. This will help to make undergraduate instruction timely and reflective of the special interest and excellence of the Brown faculty. In this usage faculty is an all-encompassing term unfettered by payment scheme, geography, or scope of institutional station and privilege.

For four weeks a year, the clinical faculty would be expected to give teaching services in this program. The teaching assignments would be made on an equitable basis by the committee for instruction previously mentioned. I anticipate that each ophthalmologist would provide 60 to 90 hours of his time to the department each year. This commitment would include administrative assignments and planning sessions above the pure teaching role, in order to make this a more efficient operation at the outset. It would include even greater involvement in the next stage of the education process, residency training. As a **quid pro quo,** the University Department of Ophthalmology would provide an umbrella for a system of continuing medical education for the practicing ophthalmologist. This stage will demand the most of the participating ophthalmologist — but also will provide the most reward.

The quality of the Brown community eye residents will be under scrutiny by consumer advocates and the government and, of necessity, will reflect the quality of the teaching environment. In essence this quality will clearly document and easily demonstrate the type of teaching environment from which these residents spring. From this we can be confident that we shall be turning out superb residents, as we have in the past, and even better in the future. These eye residents will be symbols of the continuing excellence of the Rhode Island ophthalmic practitioner community and should reflect the collective skills of the faculty of the Brown program. We must acknowledge that to teach clinical ophthalmology, one need not have charisma, be a born pedagogue or researcher, one must simply be a sound clinician, well versed in the ophthalmic literature, enjoying his work, and desirous of sharing his knowledge with those who eventually will inherit his role of clinical leadership and maintain his goals of clinical excellence. To reach the resident is to share as a full partner in the educational process. To teach is to fulfill different objectives in each of us, but it also offers a solid passport to the concept of re-certification.

The first step in this teaching process will require 15 to 20 hours of the clinician's time each quarter of the academic year. I suggest that an introductory basic course for the Brown resident in ophthalmology — the course which is currently sought after at Harvard — must be available in the Rhode Island area. Brown has all the resources necessary to provide an excellent basic science curriculum equal to that at Lancaster, or Harvard or Columbia.

This course might occupy half of the incoming eye residents' day for three months. It will offer a comprehensive package which may require the core faculty and the clinicians to go back to the books to prepare this postgraduate curriculum. Once the effort is made and the course packaged, it can be offered each year with only those changes necessitated by new developments in the field. One half of the course content should be prepared by the on-campus faculty involved in aspects of the visual sciences such as physiology, neuropharmacology, ethics, genetics, and anatomy. Clinical faculty would attend these yearly courses as often as required to update their knowledge in the core sciences. The feedback potential is tremendous for the clinical faculty, who will have the responsibility for coordinating the other half of the program. This design should also facilitate communication between clinician and basic scientist, so that clinical empiricism diminishes under the tutelage of the basic sciences.

The syllabus for the clinical half of this course might be similar to the continuing education program offered by the American Academy of Ophthalmology and Otolaryngology. The teaching assignment for each of the

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clinical sections could be rotated among the 30-odd clinical voluntary faculty members. Over a period of five years each clinician would have reviewed in depth all of the material suggested by the American Academy. This would enable the clinician faculty member to remain current in the field, not lagging behind the expansion of ophthalmological knowledge. Surely, such a person could easily be recertified with dignity and pride in his role of maintaining standards of clinical excellence in the ophthalmic field.

After years pass and the structure settles on its foundation, subspecialties will develop as new clinicians enter into practice here. The Boston Express of Consultative Referral will become the Providence Local; all retinal disorders, glaucoma, external diseases, neuro-ophthalmological disturbances, and even corneal problems could be managed within the Brown medical school's visiting faculty arena. At this point the intrinsic beauty of the eye as a tool for the basic researcher may be more readily recognized by the core faculty. More questions can be asked more probingly by our corps of specialists.

This idea can be realized in a place such as Brown. A start should be made, but the start should be modest. Participation by the Rhode Island ophthalmological community in the Brown ophthalmic program requires their involvement in teaching. Clinical teaching by the practicing ophthalmologist would, therefore, fulfill his obligation to his profession, his community, his patients, his students, and himself. The best student is the best equipped, usually, to be the best teacher. The best teacher must be an excellent student. In clinical medicine, we should always be students. The ophthalmologists of Rhode Island have the unique opportunity of being teachers as well. Let's make a start with the curriculum committee of on-campus and off-campus faculty — persons who represent the best interests of the visual sciences before the faculty and administration at either the University or the hospital levels. Together these persons can develop a superb Section of Visual Sciences.

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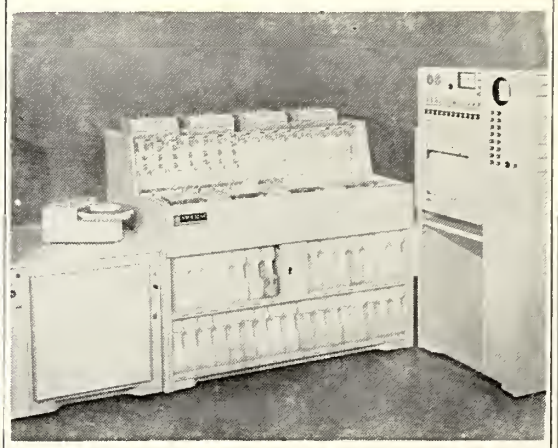
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VI. Another Possible Approach

By A. Robert Bellows, M.D.

In March of 1976 a meeting was held to review the status of ophthalmology at Brown University's medical school and to determine the need and justification for development of a Section in the Visual Sciences. The ophthalmic community and the basic science faculty of the University were asked to express their views regarding the possible evolution of a visual science department. During the weekend meeting it was possible to ascertain the attitude of the University toward ophthalmology, to review the teaching program for medical students and residents, and to visit the medical school facilities and the associated hospitals which actively contribute to the students' exposure to ophthalmology. In addition, a meeting was held to provide a forum for discussion exploring development of a program in vision. The charge that emanated from these meetings was to find answers to these questions: Is there a need and place for a Section of Visual Sciences at Brown and if so, how might it be best accomplished?

IS THE ENVIRONMENT RECEPTIVE?

The University's contribution to ophthalmology at this time is primarily organizational and supportive; there are no full-time ophthalmic or basic scientists responsible for the teaching and research programs, but rather a vibrant group of practicing ophthalmologists who have implemented the teaching program.

A significant number of faculty members of the medical school and University have special interests in the visual sciences; these gifted scientists certainly would augment a program in this discipline. An additional asset is Brown's integration of its graduate school programs with the entire University community. The medical school certainly functions on this philosophy; the usual barriers between departments are not apparent here and there seems to be great potential for exchange of ideas and participation of many disciplines in confronting the problems related to the science of vision. Thus, the medical school and University faculties can communicate, collaborate, and even permit individuals to work intimately in fields outside of their primary disciplines. This climate can contribute to the ultimate in scientific discourse and would allow the University to encourage and support a multi-disciplined approach to the research and teaching in the visual sciences.

THE NEED AND WHO WILL BENEFIT

Ophthalmic research has been greatly retarded by lack of communication and awareness within the basic science and clinical communities. Historically, basic scientists have been intimately involved in solving the many fundamental problems generated by clinical ophthalmology. Brown would benefit by utilizing its outstanding faculty and the allied sections of its medical school to collaborate on problems generated by an ophthalmic faculty. Such cooperation would promote the ultimate achievement of scientific advancement which would reflect the University's excellence.

I believe that the students remain the most important concern. Many physicians bemoan the inadequate preparation they received in the fundamental principles of ophthalmology; it behooves Brown to rectify this deficit. The medical school curriculum

(Continued on next page)

A. ROBERT BELLOWS, M.D., *Instructor in Ophthalmology, Harvard University, Cambridge, Massachusetts.*

should introduce students to the fundamentals of clinical ophthalmology as well as to the clinical problems that can be solved potentially by research. Hospital and office based clerkships should be expanded, and the important additive of a research-oriented section is the encouragement of an enthusiastic and energetic group of students.

The existing practice-oriented residency program also would benefit from a University-based ophthalmic program; ophthalmic house officers would gain an enriched basic science instruction program as well as an opportunity to participate in research. It seems apparent, then, that both students and residents need and would benefit greatly from a Section in the Visual Sciences.

The ophthalmic physician in Rhode Island is aware that continued education is the key to maintaining excellence in his level of practice. New developments must be assimilated, and this frequently is done through structured courses, seminars and national meetings to update previous training. A clinically trained research-oriented faculty would provide a medical forum for the participating ophthalmologist and contribute subspecialty expertise for consultative and educational purposes. The University faculty would enhance the level of ophthalmic practice and encourage improved care of patients, and a more formal program would **expand** the opportunity for qualified and interested clinicians to teach medical students and house officers. I believe there is ample evidence that the practicing physician recognizes the need for an ophthalmic faculty at Brown.

POTENTIAL HAZARDS OF A FORMAL SECTION

One major concern is that a section might be financially impractical and would impose fiscal burdens too great for the University to assume. Another problem is that there might be direct competition from a University-based faculty with the practicing ophthalmologist in the community. The resultant hostility could create a schism in communication and future cooperation. But I believe that in a properly organized section this problem could be alleviated.

It also is appropriate to examine what the University and community **do not** need when planning for a faculty in the visual sciences. A University-based section in ophthalmology is **not** needed to deliver primary care to the Rhode Island population; the existing number of ophthalmologists is adequate to provide the primary care to the patients of this state. Thus, it seems essential that any program developed must be independent from a financial base that would require salaries to be generated from patient income. It also would **not** be valuable for Brown to develop a program based only on a research contribution, since this approach would neglect the educational requirements of the medical students, house officers, and practitioners. A "research only" attitude also would exclude the ophthalmic physician and thereby threaten this valuable liaison. Creating a large clinically-oriented residency program also appears unnecessary since the potential need for more ophthalmologists in the future is not evident at this time — it seems more relevant to emphasize **better** rather than more ophthalmologists.

POTENTIAL DEVELOPMENT FOR A FULL-TIME SECTION

I would propose three possible approaches to selection of a section director: 1. Appoint a part-time chairperson from the existing faculty of clinically-oriented practitioners to coordinate efforts in education. This approach could lead to a better organized and more consistent clinical program but would not provide the vital link with the University faculty needed to enhance research efforts. A director of this definition also would not serve to bring new knowledge into the community of practicing ophthalmologists. The quest for this position also might create unnecessary competition, which ultimately could be detrimental to the program. 2. The appointment of a full-time clinically-oriented chairperson from one of the existing affiliated hospitals is a possibility. But this approach is fraught with many problems, not the least of which is financial support. If adequate funding is not provided, a clinically directed chairperson might be forced to practice "primary care" ophthalmology in order to develop a large clinical service to support his department and justify his presence. Such a chairperson might not communicate with the basic science faculty of the University, relegating research to a minor role

(Continued on page 221)

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VII. An Edited Version Of The Final Report To The Dean Of Medicine From The Committee On Ophthalmology, September 21, 1976

By Joseph L. Dowling, Jr., M.D. (Chairman); Levi C. Adams, Reid S. Appleby, Jr., M.D., Arthur I. Geltzer, M.D., Robert S. L. Kinder, M.D., James T. McIlwain, M.D.

I. BACKGROUND

The Committee on Ophthalmology was appointed on October 15, 1975 by Dean Stanley M. Aronson to evaluate the present and future role of the visual sciences in the Brown University medical school, to design a program in academic ophthalmology consistent with Brown's academic excellence and potential resources, and to establish a realistic timetable for the implementation of the Committee's recommendations.

Beginning in November 1975, the Committee met frequently to discuss the issues related to the visual sciences at Brown University. The Committee consulted Program in Medicine and other University faculty, administrators, students, and graduates. In addition, opinions and ideas were sought from practicing Rhode Island ophthalmologists, hospitals' staff and administrators, and representatives from the Rhode Island Lions Sight Foundation, Inc. After analysis and evaluation, a number of specific recommendations regarding the current teaching of ophthalmology in the undergraduate years of the Program in Medicine were submitted as an interim report. A summary of these recommendations is included as Appendix A of this report.

In March of 1976 the Committee began its consideration of the future direction of the visual sciences by inviting two oustanding Brown University graduates who are prominent ophthalmologists, Doctor A. Robert

(Continued on next page)

ACKNOWLEDGEMENT

The Committee on Ophthalmology wishes to thank the many persons in the Brown community who offered comments, advice, and criticisms during our deliberations. We want especially to acknowledge the most valuable contributions of those expert ophthalmologists who responded to our call from beyond the borders of Rhode Island. We are grateful to the Brown Medical Association and the Rhode Island Ophthalmological Society for their generous financial support of the seminar "The Future of the Visual Sciences," and to the editors of the **Rhode Island Medical Journal** for agreeing to publish the papers presented at that seminar.

JOSEPH L. DOWLING, JR., M.D., *Clinical Assistant Professor of Surgery (Ophthalmology), Brown University.*

LEVI C. ADAMS, *Assistant Vice President for External Affairs (Biology and Medicine), Brown University.*

REID S. APPLEBY, JR., M.D., *Vice President, Rhode Island Ophthalmological Society.*

ARTHUR I. GELTZER, M.D., *Clinical Assistant Professor of Surgery, (Ophthalmology), Brown University.*

ROBERT S. L. KINDER, M.D., *Clinical Assistand Professor of Surgery (Ophthalmology). Brown Universtiy.*

JAMES T. McILWAIN, M.D., *Associate Professor of Medical Sciences, Section of Neuroscience, Brown University.*

Bellows of Harvard University and Doctor Harold Spalter of Columbia University, to return to the campus. These outside experts concluded an inspection of the medical school and hospital facilities, discussed matters pertinent to the visual sciences with various interested individuals, participated in an open forum to which all practicing ophthalmologists in Rhode Island were invited, and helped the Committee to determine that a more extensive planning conference was in order.

Subsequently, a highly successful formal seminar titled: "The Future of the Visual Sciences" was held on campus on June 1 and 2, 1976. This conference permitted the Committee to draw on the considerable experience and wisdom of a number of nationally recognized academic ophthalmologists in a discussion of the current and future needs of educational programs in the visual sciences. In addition to Doctors Bellows and Spalter, the following distinguished out-of-state visitors made formal presentations and participated in panel and informal discussions:

Sidney A. Fox, M.D.
Clinical Professor of Ophthalmology
New York University, New York

Arthur H. Keenep, M.D., D.Sc.
Dean of the School of Medicine
and Professor of Ophthalmology
University of Louisville, Kentucky

Carl Kupfer, M.D.
Director, National Eye Institute
National Institutes of Health
Bethesda, Maryland

Steven M. Podos, M.D.
Professor and Chairman
Department of Ophthalmology
Mount Sinai School of Medicine of the
City University of New York, NY

Bruce E. Spivey, M.D.
Chairman Department of Ophthalmology
San Francisco, California

At the seminar Doctor Spivey stated candidly that, "at least in the United States ophthalmology is poorly taught to undergraduate students." Brown currently has the opportunity to respond to this challenge by inaugurating a program which will allow and encourage excellence in the teaching of ophthalmology to undergraduate medical students, graduate trainees, as well as practicing ophthalmologists. The Committee has carefully considered a variety of organizational and structural designs deemed best to satisfy the needs of ophthalmological teaching and investigation and to offer Brown the greatest opportunity for a national leadership role in the visual sciences.

II. RECOMMENDATIONS AND EXPLANATION

The Committee recommends:

A. That the Division of Biology and Medicine establish a section of Visual Sciences.

B. That the Section of Visual Sciences be Campus based.

C. That a full-time Section Chairperson be recruited as soon as possible.

A. **The Section of Visual Sciences.** — Without exception each participant in the seminar on "The Future of the Visual Sciences" and each Committee member believes that the establishment of an independent section of ophthalmology at Brown University medical school is essential. The title, "visual sciences," is recommended rather than ophthalmology to indicate the extensive area of study encompassed by the section and to emphasize the continuity between clinical and basic sciences related to vision.

An independent section is needed because the visual sciences are a large and important component of scientific and medical endeavor. From 5 to 10 per cent of patients coming to primary care physicians have eye complaints. In addition, specialists such as neurologists, neurosurgeons, and otolaryngologists have substantial need for ocular knowledge. Yet, the time allocated to vision in medical school curricula is not commensurate with the total medical involvement in eye disorders. A comprehensive survey of practitioners, specialists, generalists, teachers, house officers, students, and faculty members by Doctor Spivey in 1968 showed clearly that medical students and non-ophthalmologist physicians believe that more ophthalmological skills and knowledge should be acquired by medical students than is currently offered. In this regard it is interesting that at Brown, for example, the medical class of 1976 selected an ophthalmology elective 26

times as compared to 9 in general surgery, 9 in obstetrics and gynecology, 6 in orthopedics and 11 in psychiatry. Since only a few of these graduates plan to pursue careers in ophthalmology, it is clear that they perceived a need for more teaching in this area.

Graduate training in several primary care specialties now requires the inclusion of organized ophthalmological training. It is likely that this requirement will increase in the future. The proliferation of teaching responsibility and demand is currently exceeding the capability of the voluntary faculty. Proper coordination and organization of teaching responsibilities is needed to avoid wasted effort and duplication. These needs are best met within the framework of an independent section.

A major and increasingly important responsibility of a medical school today is in the continuing education of all practitioners throughout their entire professional careers to keep pace with changes in medicine brought about by the accelerated output of new knowledge; and the spiraling complexity and cost of medical services has resulted in a need for accountabliity — to consumers, to various licensing and certifying organizations, and to governmental and other funding sources. The response of medical schools to the demands for accountability on all levels and recertification of practicing physicians will likely influence their future allocation of federal, state and other funds. These responsibilities can only be met to a suitable level of excellence by an independent section in the visual sciences.

Ophthalmology is organ-oriented. As such, it does not fit into any of the presently established divisions of medicine. Most frequently ophthalmology is considered a part of general surgery. Yet, only about 10 per cent of an ophthalmologist's time is devoted to surgical pursuits. Similarly, although there are many common denominators, the practice and techniques of ophthalmology do not fit snugly into internal medicine, or pediatrics, or neurology. It is unlikely that a professor or chairman of a surgical, medical or other section has the background or knowledge properly to assess the quality or competence of ophthalmological practice or training.

B. **The Campus Base of Visual Sciences.** —The Committee strongly recommends that the Section headquarters be located on campus. A campus-based Section of Visual Sciences will demonstrate the validity of the concept that the undergraduate university brings basic scientific and humanistic strengths to the medical school which is an extension of and a continuum with the University. Brown has a longstanding tradition of excellence in visual research, particularly in the Psychology Department. This internationally recognized leadership, the rapidly emerging Center for Neural Studies, and the considerable strength of the basic sciences of physiology and pharmacology offer Brown an unusual opportunity to be in the vanguard of the changes so badly needed in the field of vision. It would be extremely difficult to build the kind of program these strengths afford if the section were to be located in a hospital some distance from the campus resources.

A new era in medicine and ophthalmology is at hand. Future scientific advances and treatment modalities will be accepted only on the basis of carefully documented and confirmed basic scientific research and carefully controlled, protective clinical trials. Brown is ideally suited to meet these requirements because of its well-established excellence in the basic sciences and its association with many community hospitals. It is evident that the medical school need not become involved in primary clinical ophthalmology, since high quality eye care is currently available to the people of Rhode Island. The Committee believes that the need for scientific investigation in the problems of vision far exceeds the need to allocate new resources to ophthalmology residency training at the present time. Post-residency fellowship training in highly specialized aspects appears to be a likely future trend and would be quite suited to a campus location. Such a location will also encourage and facilitate projects by non-medical students with research interests and potential.

A successful medical school requires an appropriate balance between teaching, patient care, and research functions. At Brown the

(Continued on next page)

limited campus-based clinical research facilities and the preoccupation with patient care by the various associated hospitals often has discouraged proper development of the investigative functions. A campus-based location should ensure the proper place of research in the triad of medical school functions.

A centrally located campus-based section will also facilitate coordination of patient care, research, and teaching in the various Brown associated hospitals as well as in the other hospitals of Rhode Island. Furthermore, a clinical section with a strong basic investigative component, located on campus, would be a positive factor in stabilizing the relationship and parity between the medical school and the hospitals.

C. **One Chairperson of the Section of Visual Sciences.** — The new section of Visual Sciences will require a variety of personnel including a full-time section chairperson, other full-time scientists, and voluntary part-time faculty.

The chairperson of the Section must be an ophthalmologist with a strong basic science background whose principal activity will be the application of basic medical knowledge to fields of clinical usefulness. Research, which is a cornerstone of any flourishing section and is urgently needed in the visual sciences, can only exist with full-time personnel. The chairperson would serve on the appropriate medical school committees and would have overall responsibility for the administration of the section and its teaching and investigative activities.

As time, need, and resources permit, other full-time scientists should be recruited to participate in the research and teaching activities of the Section. These scientists may have primarily an ophthalmological background or they may be visual scientists with other advanced degrees. It is likely that scientists from other sections will develop relationships of varying degrees to the Section of Visual Sciences. Every effort should be made to minimize any artificial barriers between scientists in various sections. In all these functions a full-time chairperson is essential.

III. SUGGESTIONS FOR IMPLEMENTATION

The key to successful implementation of these recommendations and to the inauguration of a successful Section of Visual Sciences rests with the appointment of the section chairperson. Only slightly less urgent is the necessity to identify financial resources and delineate space requirements. Some initial financial commitment from the medical school itself will be necessary. It seems likely that substantial funding can be obtained through such organizations as the National Eye Institute, Fight for Sight, Inc., Research to Prevent Blindness, the Rhode Island Lions Sight Foundation, and various other foundations. The Providence Veterans Hospital is a potential source of facilities and financial support.

An Ad Hoc Committee should be established at this time to aid in the transition of the visual sciences to full section status. This committee would coordinate and schedule undergraduate teaching, advise on voluntary faculty appointments, advance or review recommendations for additional electives, advise in the selection of a permanent chairperson, and aid in the acquisition of funding and adequate space.

The Vice President (Biology and Medicine) in consultation with the Dean of Medicine and the Ad Hoc Committee, should move to establish an Advisory Committee to the Section of Visual Sciences composed of nationally recognized visual scientists and educators. Initially, this committee would consist of the invited speakers at the seminar on "The Future of the Visual Sciences." From time to time other individuals could be appointed. The committee members would periodically visit Brown in the role of Visiting Professors. They would give lectures, conduct rounds and conferences, and provide objectivity and perspective to the growth and development of the visual sciences at Brown.

IV. CONCLUSION

Brown has the unique opportunity to establish an independent Section of Visual Sciences which can become a national center of excellence in ophthalmic education. The University has accepted this challenge and hopes to implement the program promptly, recognizing the problems of funding, personnel, and space.

APPENDIX A

Outline of Suggested Changes in Undergraduate Ophthalmology Training at Brown

I. The following recommendations were made for teaching ophthalmology in the Biomedical 370 course, Physical Diagnosis.

(a) In order to give the student basic tools in ocular examination, a three-hour didactic lecture utilizing the slides on external examination, and ophthalmoscopy with a three-hour practical session in small groups should take place the first week in September.

(b) The lecture material should be coordinated with the teaching of basic anatomy and physiology of the eye.

(c) The practical teaching should be done in a central location with a uniform curriculum.

(d) A second exposure to ophthalmology should occur at the end of the Physical Diagnosis course.

II. The third-year clerkship in ophthalmology should be moved from the surgical (Biomed 316) to the medical (Biomed 301) clerkship. During this medical clerkship one afternoon session per week for six weeks should be utilized for didactic lectures, discussions, rounds, and patient presentation.

III. The current elective courses (Biomed 321A, B, and C) should be maintained and consideration given to the development of additional electives.

IV. Research opportunities (Biomed 399) in vision should be identified and made available for interested students.

Mr. Levi C. Adams
Division of Biomedical Sciences
Brown University
Providence, Rhode Island

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Editorials

DRUG ABUSE COMMITTEE REPORT

Misuse of prescribing practices by physicians has been a problem for decades. In terms of numbers it is unlikely that it ever represented more than a fraction of one per cent of the total number of practicing physicians in this state, but this smaller number could and did create small epidemics of illegal supplies of controlled substances to abusers.

The stock in trade was and is mainly amphetamines but also included barbiturates and, in some instances, narcotics.

The Rhode Island Medical Society, through its Drug Abuse Committee, has been concerned about this problem for a number of years, but it was unable to aid enforcement authorities in bringing about a cessation of this misuse because of legal constraints.

Two years ago at a meeting with the Director of the Department of Health and officials from the Drug Control Divsion, the president of the Society offered assistance to the Division, by providing consultation on a hypothetical case model and offering to provide a list of expert medical witnesses for grand jury proceedings. Our membership was provided with guidelines for prescribing barbiturates and amphetamines.

The AMA has published the barbiturates guidelines, and the Rhode Island Medical Society has published guidelines for prescribing amphetamines in hyperkinesis.

Amphetamines are frequently prescribed for the treatment of obesity as an adjunct to diet. Most frequently this problem involves young women. Because of the drug's propensity to have a transient anorexigenic effect, patients will sometimes increase the dose to potentiate the effect and can become dependent on the drugs. This dependence can lead to other drug dependencies involving barbiturates and tranquilizers. Analysis of the records of psychiatric institutions and community mental health centers demonstrates a preponderance of younger women as patients.

This sex and age group, the one for which amphetamines are usually prescribed, is by its nature most susceptible to dependence. Because of its transitory anorexigenic effect, it would seem the risk benefit ratio is heavily weighted toward risk.

Since this class of drugs is frequently used in abusing the privilege of prescribing and because of its strong potential for creating dependence, the Rhode Island Medical Society House of Delegates adopted a resolution (on March 9, 1977) sponsored by the Drug Abuse Committee which opposes the use of amphetamines in the treatment of intractable obesity.

It is hoped that this resolution, which indicates the desire of the Rhode Island Medical Society to eliminate the misuse of prescribing practices, will encourage the Rhode Island Department of Health and its Drug Control Division to take the necessary steps to eradicate it.

JOHN E. FARLEY, JR., M.D.
Chairman
Drug Abuse Committee



GLAUCOMA: A PRIMER

Glaucoma is a group of eye disorders characterized by an increase in intraocular pressure, which may lead to changes in the optic disc and typical defects in the field of vision. The three most common types are narrow-angle or closed-angle glaucoma, open-angle or chronic glaucoma (the commonest type), and congenital glaucoma.

Closed-angle glaaucoma is characterized by a shallow anterior chamber and a narrow angle in which filtration is compromised as

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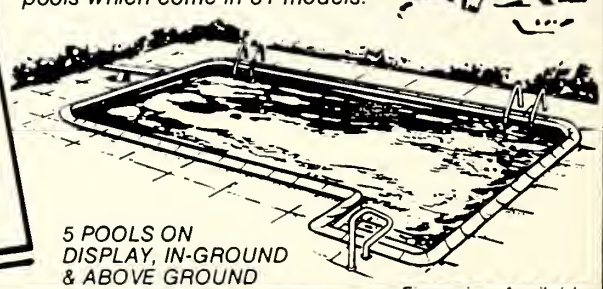
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a result of the iris blocking the angle. In general it tends to occur in people whose eyes are smaller than normal. Eskimos have small eyes, possibly to protect the cornea from freezing. Eskimos have a higher than expected incidence of angle-closure glaucoma. Of the three most common types angle-closure is the most devastating. It may occur without warning, as the minute drainage channels tend to block off when the pupil dilates. Anything that dilates the pupil can trigger an attack, such as a darkened room or theater; adrenalin produced by stress, anger, or excitement; and various medications, such as certain tranquilizers, amphetamines, and appetite suppressants. The use of pupil dilators in the ophthalmologist's office may precipitate an attack. This is one reason why it is desirable to limit the use of drugs such as pupil dilators by optometrists. Without prompt medication an attack may cause total blindness. Symptoms are pain, blurred vision, and fuzzy halos around bright lights.

Eyedrops of pupil constrictors (miotics/cholinergics) may be used, or peripheral iridectomy when indicated to allow fluid escape even when the pupil is fully dilated. More recently laser beam iridectomy has been used to burn a hole in the iris. This has been performed as an office or outpatient procedure.

Open-angle (chronic) glaucoma is insidious in onset. Usually the blockage (due to interference with the exit of aqueous humor from the anterior chamber through the trabecular meshwork at the limbus) occurs undetected, and the rise in pressure is painless and so gradual that the optic disc deteriorates imperceptibly. Peripheral vision gradually fails, producing tunnel vision, and eventually total blindness. The symptoms are foggy vision, halos, and difficulty of adjusting to darkened rooms.

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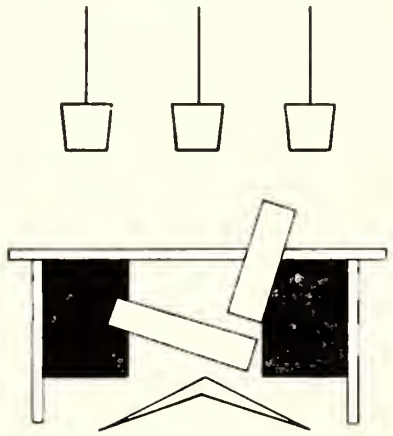
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For cases not amenable to medical treatment, a filtering operation in the way of sclerotomy by trephine, punch, or scissors has been the standard procedure. A more recent operation, trabeculectomy, in which the fluid filters out from beneath a flap of tissue that acts like a trap door, has had increasing vogue because of its relative safety and dependability.

Besides the three primary types of glaucoma there are secondary types caused by inflammatory conditions, diabetes, tumors, vascular disorders, trauma, iatrogenic intervention, and many others. A surprisingly high incidence of glaucoma occurs after cataract extraction in patients who are nearsighted.

Investigation of new drugs continues. The most intriguing of these is marijuana. It was found, quite by accident, that smoking of marijuana has a salutary effect on the increased pressure of glaucoma. Some of the components of marijuana administered in eyedrops are effective in both reducing fluid production and increasing filtration. The effect appears to be central rather than local. The discovery of the possible efficacy of marijuana has opened up a whole new avenue of therapeutic and pharmacologic investigation.

Because of the effectiveness of the treatment of glaucoma in preventing blindness, diligent case finding is important. Everyone past middle age should have periodic tonometry.



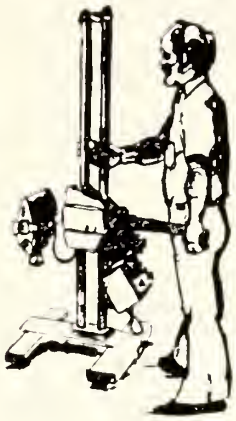
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I. OPHTHALMOLOGY IN MEDICAL STUDENT EDUCATION

(Continued from page 181)

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Department of Ophthalmology
Pacific Medical Center
San Francisco, California



II. THE RELATIONSHIP OF OPHTHALMOLOGY TO OTHER SCIENCE MODALITIES

(Continued from page 185)

ple, who are going to get good residencies. Simliarly, you should not be greatly happy that a large number of them went into ophthalmology, because ophthalmology is a presold product at present. Eye residencies have continued to be the highest-filled residencies since the mid-Fifties. Though there are cyclic situations among the specialties, I don't believe I know what the cycles are. Certainly, right after World War I, eye residencies were at the top of the scale. They did take a dip in the early Fifties, at a time when it was very difficult to obtain a surgical residency. Then there was a change: in the mid and late Fifties eye specialization came out of the trough and has remained on top. This seems to be an unusually long phase; I expect changes, but the market hasn't changed in more than 20 years. So, if you combine a presold academic name such as Brown with a presold specialty in medicine such as ophthalmology, you must accept disproportionate growth. A real commitment at Brown will produce a major program, and if you are disinclined to add on to ophthalmology, you're going to be in trouble.

CONCLUSION

I'd like to close by pointing out that there also must be some aesthetic and beautiful value in life. Ophthalmology uniquely affords this. Beauty of surroundings does make recruiting easier, and it improves the way people live and eat. There is no question that a different type of performance surrounds a thing of beauty. You do have inherently in Providence, not only a tremendous scholastic base, but also things of beauty. I'm an advocate for "full speed ahead!"

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III. A DEPARTMENT OF OPHTHALMOLOGY: A PERSONAL VIEW

(Continued from page 191)

sons. I envision a nidus of three full-time individuals.

Obviously, the active attending ophthalmologist is important. He or she is essential to training and to provide a different outlook for the resident and the student as compared to that of the full-time person. Why would an individual in private practice give time to teach and become involved with an institution? Part of the reason lies in the intellectual surroundings. The active attending surgeon who wants to maintain knowledge, who is stimulated by teaching and by what is going on around him, and who wants to continue learning should be encouraged to do so. Attending surgeons must be provided with beds and operating room space. In some institutions a physician cannot receive privileges unless he is willing to teach and spend time there. The hospital must provide beds and operating room space for these individuals, so commitment on the part of the hospital becomes especially important. But even more important is an active chief who can exert pressure and who can be the ombudsman for the entire ophthalmic community.

In terms of the individuals required, the basic scientist is a very important element. I would emphasize the concept of joint appointments by the hospital and the University, as well as the attraction of individuals who may want to be specifically in the department of ophthalmology, performing research as basic scientists.

Where does the money come from for a department? It comes from "hard money," budgets, endowment, and the institution itself. In the beginning "seed money" will be needed to establish the department and support it during its early years, but this support certainly should decrease in future years. Much of this money comes from practice income and is essential in building a department of ophthalmology and visual science. If such income is so important, there must be individuals who are willing to spend at least part of their time to provide it, and there must be an incentive for them to do so. This incentive can be a personal one or for the

department; I should hope it would be the latter.

The department itself should control most of the funds to be used in building the department — not a reversion of the money to the hospital or school, but a direct feed into the department. Certainly, a portion of the funds should go to the hospital or the school for overhead and the services they are providing, and part of the money should go back to the parent institution to help support the basic scientists within the institution. But the majority of the funds should be under departmental control, used to build the department and to achieve the departmental goals.

These, then, are my views on a department, how a department interacts, and what a department must prepare for with respect to the future. Many will not agree, but I hope that the thoughts I have expressed will provide a basis for some serious discussion on an important subject.

City University of New York
New York



VI. ANOTHER POSSIBLE APPROACH

(Continued from page 204)

which would be a serious deficit. 3. An additional possibility is to appoint a full-time ophthalmologist with basic research capability who would function primarily as a scientist and educator. This person should bring to the ophthalmic community an excellence in subspecialty training and provide consultation as well as develop educational programs. Again, a major concern is the problem of funding; it is unlikely that the medical school budget could fully fund a chairperson of this description. It would be imperative that funding from private foundations as well as government support be available if this type of individual were recruited. Yet, I believe this third possibility is the most effective solution.

RECOMMENDATIONS

To convey my attitudes regarding formation of a full-time section in the Visual Sciences, I will offer the following specific recommendations:

(Continued on next page)

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1. Creation of an independent section that will function as an autonomous unit within the structure of the medical school.
2. The section should be directed by a full-time chairperson who is an ophthalmologist with a strong basic science and research background. His principal interest and concentration should be directed toward an academic career, and his efforts should be concentrated on formation of a department with outstanding research and teaching capacity.
3. The chairperson should provide subspecialty expertise that would allow the patient population of Rhode Island to obtain excellent care in this state and thereby obviate the need to travel in order to seek competent consultation.
4. Coordination of the existent multi-hospital, practitioner-directed, clinical program should be encouraged and expanded.
5. Efforts to provide conferences, seminars, and courses to disseminate new information are crucial to integration of the practicing physician within the University environment.
6. The financial commitment to the chairperson must come from the University or independent sources; research and education should be his only concerns.

In conclusion, if a plan is adopted to create a department as outlined and to appoint a full-time director, the task will be herculean. However, if Brown should seize the opportunity, it most surely would succeed.

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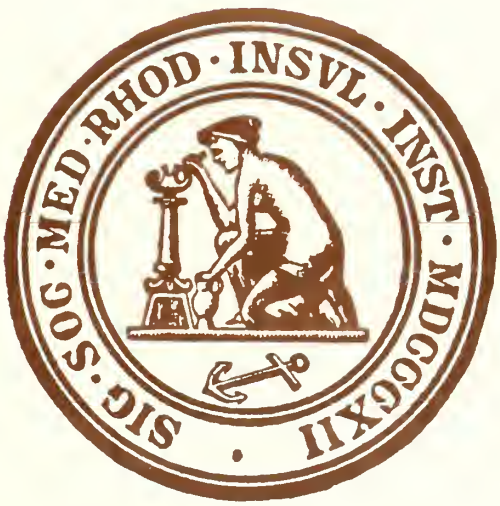
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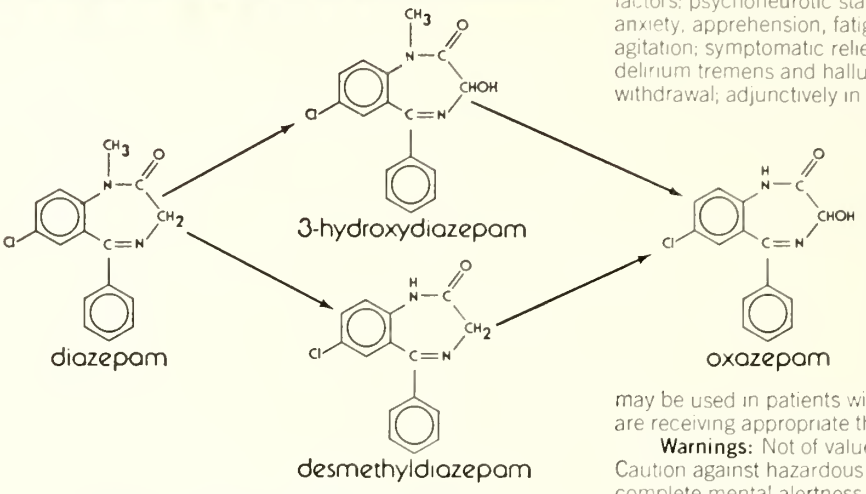
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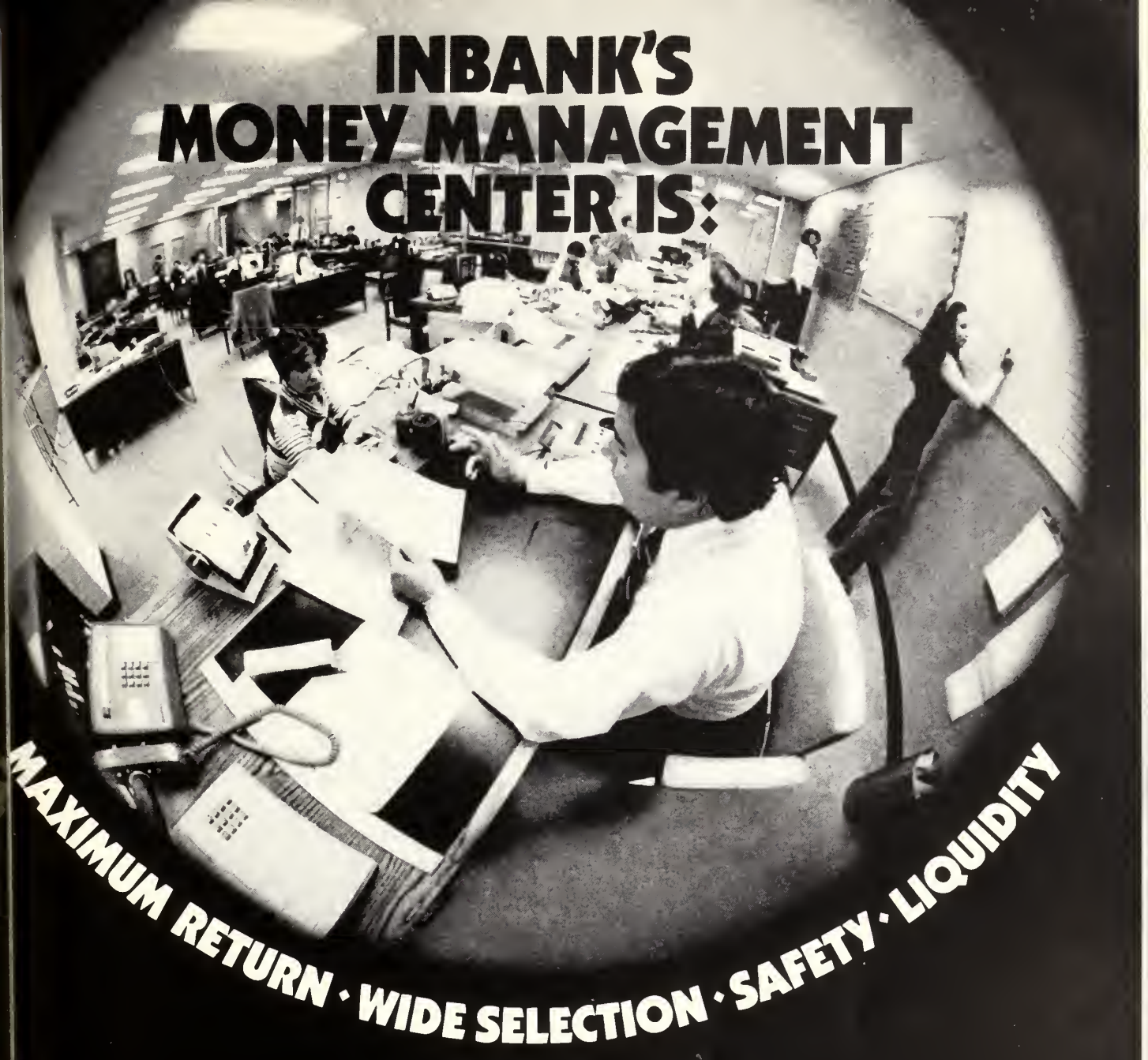
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A Message From The Dean

THE STATE OF RHODE ISLAND INTERNSHIPS (1977-1978)

The internships obtained by the Brown University medical students (Class of 1977) were summarized in the March, 1977 issue of the Rhode Island Medical Journal. It was evident that our own recent graduates will be more geographically distributed, in terms of the initial year of graduate medical education, than their predecessors in the graduating classes of 1975 and 1976. It was also clear that the medical students graduating from Brown continue to be chosen by some of the most eminent academic medical centers in the United States.

The graduate medical education programs situated in the hospitals of Rhode Island represent yet another aspect of medical education which impinges significantly upon the practice of medicine in the state of Rhode Island and the health care capabilities available to the Rhode Island community.

On July 1, 1977, the hospitals affiliated with Brown University will accept 91 recently graduated physicians for their first year of graduate medical education (internship). They will be part of approved patient care training programs in family medicine (Director: David Greer, M.D.), internal medicine (Directors: Paul Calabresi, M.D., Milton Hamolsky, M.D., Herbert Lichtman, M.D.), pediatrics (Director: Leo Stern, M.D.), obstetrics and gynecology (Director: Karlis Adamsons, M.D.) and surgery (Director: Henry T. Randall, M.D.).

During the recently concluded Intern and Resident Matching Program, the University-affffiliated hospitals offered 92 patient care internships. Ninety-one of these 92 hospital posts were competitively filled by the Matching Program and with a cadre of exceptionally well-qualified individuals. These 91 individuals are graduates of 45 different American Medical schools (situated in 24 states and the District of Columbia) as well as four overseas colleges of medicine, as noted in Table 1 below.

These new interns list 21 different states as their home and all but one of the 91 hold American citizenship. Fifteen of the 91 are native Rhode Islanders. Table 2 summarizes the home residences of these new physicians in training.

When we attempt to interpret these data (particularly when considered jointly with

(Continued on next page)

TABLE 1
Medical Schools Attended by 1977-78 State of Rhode Island Interns (a)

New England (23)		George Washington	2	**South (6)**		Northwestern	1
Boston U	3	Georgetown	2	Emory	1	St. Louis U	1
Brown	11	Hahnemann	3	U Florida	1	Wayne State	1
U. Conn.	1	Jefferson	3	U Miami	1	Wisconsin	2
Dartmouth	1	Johns Hopkins	1	U Texas	1		
Harvard	1	Med. Coll. Penn.	1	Tulane	1	**West (7)**	
U Mass.	2	Mt. Sinai	1	U Virginia	1	U California(b)	2
Tufts	3	New Jersey	1			U Colorado	1
U Vermont	1	New York Medical	5	**Mid-West (11)**		U New Mexico	1
		U Penn.	2	U Cincinnati	1	U Washington	3
Middle Atlantic (36)		U Pittsburgh	2	Chicago (Osteopath)	1	**Foreign Schools (8)**	
Albany	2	U Rochester	3	Creighton	2	Bologna	1
Columbia	2	State U, NY(b)	4	Michigan	1	Brussels	3
Cornell	2			Michigan State	1	Guadalajara	2
						Roma	2

(a) Internships at: Memorial Hospital, Rhode Island Hospital, Roger Williams General Hospital, The Miriam Hospital, Women and Infants Hospital.
(b) Multiple campuses.

TABLE 2
Place of Residence, 1977-78 State of Rhode Island Interns

Colorado	1	Massachusetts	7	New York	24	Texas	1
Connecticut	5	Michigan	3	Ohio	1	Vermont	1
Florida	2	Missouri	2	Oregon	1	Virginia	1
Georgia	1	Nebraska	1	Pennsylvania	8	Washington	2
Hong Kong	1	New Jersey	8	Rhode Island	15	Wisconsin	2
Illinois	3	New Mexico	1				

the characteristics of the internships obtained by the Brown medical class of 1977) two optimistic observations emerge.

First, the patient care internships in the Brown University affiliated hospitals appear to be highly sought after by well-qualified, recent graduates, over 90 per cent of whom were educated in the American medical school system. All of the eight new interns who were educated in foreign medical schools are American citizens and three of them fulfilled the undergraduate component of their clinical training in special Rhode Island programs supervised by Brown University.

The second observation pertains to the greater mobility exhibited by those graduating from Brown medical school as well as those who are about to enter the house staff programs in the Brown affiliated hospitals. In our recent graduating class of 1977, 11 of the 61 students elected to remain in the hospitals of Rhode Island; this is somewhat less than the numbers remaining in Rhode Island from the two preceding classes of 1975 and 1976.

Legitimate concerns had been expressed, some years back, that it was essential that Brown provide places for Rhode Island residents in its medical school since the state would otherwise be deprived of a population base for its local house staff and, ultimately, its practicing physicians. The increasing sophistication of the graduate medical education facilities in Rhode Island now seems to attract superior candidates into the state from other areas in the United States. This, in turn, compensates for the increased emigration of our Brown students in their first year of graduate medical education. In the long run, this will lead to a healthier base for the recruitment of well trained physicians for the Rhode Island population.

STANLEY M. ARONSON, M.D.
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President's Page

MESSAGE FROM THE OUTGOING PRESIDENT

By Herbert F. Hager, M.D.

The impact of the National Health Planning and Resources Development Act of 1974, Public Law 93-641, is increasingly evident in Rhode Island. So far Technical Reports 1 through 7 have been released by the Rhode Island Department of Health. These indicate the direction and route that Health Systems Planning will take in Rhode Island. Technical report #6 on Regionalization: Concepts and Practice is most informative. One paragraph particularly stands out as a goal of the health planning organization.

> While fairly adequate controls over hospitals and nursing homes are now written in law in Rhode Island, there is clear need for the extension of the authority of the Department of Health over the acquisition of substantial capital assets of indipendent providers.

The fear that there would be a proliferation of computerized tomographic scanners in private offices led to the introduction of Bill 77-H 6120 into the 1977 General Assembly. This bill would control, through the mechanism of "Certificates of Need," all health care providers if their private capital invested exceeded $150,000.

The proponents of this bill introduced it in an attempt to conform to the federal regulations empowered by PL 93-641. The bill, as currently worded, goes far beyond those requirements and in my judgment would be counter-productive to its purpose and not in the best interests of the people of Rhode Island.

The Federal Trade Commission is now reviewing the elimination of all restraints in competition between members of the professions. Their premise is that free enterprise and competition will force innovation, greater efficiency, and thus a reduction in charges for services.

The bill would eliminate competition and through regionalization prohibit a physician or dentist, as an individual, or as a member of a group, from opening a private office and going into practice in the location of his choice.

As a native free-born citizen of this state, which was settled by Roger Williams, and whose capitol building is adorned by the statue of the Independent Man, I am appalled at the loss of individual freedom implied in this bill.

Rhode Island has sought to attract competent physicians and dentists to settle here. We have helped to finance a local medical school, some of whose students will be enrolled from our own sons and daughters and will be likely to practice their chosen profession here.

The bill, aimed essentially at the expense of computerized tomography (CT or the so-called CAT scan), is like firing a 21 gun broadside, when an air horn might be more appropriate. It could prevent a group of physicians or dentists from opening a practice with modern x-ray or expensive laboratory equipment solely because it was in the same locality as a sectarian hospital.

The bill would concentrate all modern expensive, diagnostic, and therapeutic procedures solely in hospitals and that is why the

(Continued on next page)

Hospital Association of R.I. supported it. Yet no segment of the health care industry has had more inflation or rapid rise in costs, than hospitals. It is these expensive institutions, absorbing 45 per cent of the health care budget, that have given rise to the demand to contain costs. Public funds usually are employed years after private funds have initiated innovation. We would not have many of our famous clinics if "Certificates of Need" had been required.

I do not believe that public institutions should be relieved from the competition of the entrepreneur who opens his facility nearby and fulfills a need at a lower cost.

The physician's share of health cost is only 14.2 cents of the health care dollar. On a cost basis alone, no public institution can compete with a private physician's office.

I know of no study that has shown that certificates of need have reduced costs but I have known that in many instances, they have actually increased them.

The R.I. Courts, pursuant to the Kelleher decision, require that an attending physician employ all necessary tests to arrive at a diagnosis prior to initiating definitive treatment.

The Rhode Island physician must have readily available, and without restriction, the most efficient, labor saving, accurate diagnostic and therapeutic tools he needs to serve the people of this state.

The medical profession has been called an inefficient "cottage industry" but is in danger of becoming a "store-front" operation if capital improvements are to be controlled by political appointees. The R.I. General Assembly should not, like Charlemagne sitting on his throne on a beach in France, command that the tide of progress stop rising.

Of equal concern to me is the recent directive forced on the administration of the one hospital that now has a computerized tomographic scanner. This directive, limiting the privilege of ordering computerized tomographic scanning in a discriminating manner to certain physicians, must be protested and challenged. To the best of my knowledge, this is the first instance where a licensed physician, chosen by the patient has been denied the right to seek a direct diagnosis through the application of available diagnostic procedures. It divides physicians into two groups. One is made up of neurosurgeons, neurologists, ophthalmologists and ear, nose and throat specialists. The second group would include all other physicians and these would be prohibited from ordering the test.

Cost containment must of necessity be the concern of all physicians. New procedures must replace the old and not be simply additional expense. The availability of new techniques requires all physicians to learn the criteria for their use. It will be just as necessary to restrict the indiscriminate ordering of CT scanning by "selected physicians," as it would be if all physicians were made eligible. "Medical necessity" must be the guide and the physician ordering the procedure should be held responsible.

The physicians who practice internal medicine are trained in neurology, and if certified by the American Board of Internal Medicine are so accredited. The majority of patients most likely to benefit from CT scanning have those diseases complicated by central nervous pathology which are manifested by weakness, paralysis, or seizures. These patients are usually under the care of pediatricians, internists, or other primary physicians. It is the diagnostician's role to choose which avenue to diagnosis is the best. That role is attained by all physicians after many years of training and experience. The restriction of a physician from ordering tests is vastly different from carrying out a procedure for which he is not trained, or for which he does not have the necessary expertise.

Limiting the privileges of any contact physician will not decrease costs, but will escalate them. The attending physician would usually make the decision that a CT was needed. No directive should require a second physician to examine the patient solely to order the test. Such a consultation would be of no value to the patient. After the test, the consultant would be needed for follow-up visits, thus adding further expense. An internist might benefit most by selecting an ophthalmologist or a psychiatrist to select the test rather than to have duplication of knowledge. The test itself might negate the need for any consultant. The delay in wait-

(Continued on page 281)



Big Balanced Rock, Chiricahua Mountains, Arizona (approx. 1,000 tons)

■ **Most Widely Prescribed**—Antivert is the most widely prescribed agent for the management of vertigo* associated with diseases affecting the vestibular system such as Menière's disease, labyrinthitis, and vestibular neuronitis.

■ **Relief of Nausea and Vomiting**—Antivert/25 can relieve the nausea and vomiting often associated with vertigo.*

■ **Dosage for Vertigo*** —The usual adult dosage for Antivert/25 is one tablet t.i.d.

BRIEF SUMMARY OF PRESCRIBING INFORMATION

INDICATIONS. Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:

Effective: Management of nausea and vomiting and dizziness associated with motion sickness.

Possibly Effective. Management of vertigo associated with diseases affecting the vestibular system.

Final classification of the less than effective indications requires further investigation.

CONTRAINDICATIONS. Administration of Antivert (meclizine HCl) during pregnancy or to women who may become pregnant is contraindicated in view of the teratogenic effect of the drug in rats.

The administration of meclizine to pregnant rats during the 12-15 day of gestation has produced cleft palate in the offspring. Limited studies using doses of over 100 mg./kg./day in rabbits and 10 mg./kg./day in pigs and monkeys did not show cleft palate. Congeners of meclizine have caused cleft palate in species other than the rat.

Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

WARNINGS. Since drowsiness may, on occasion, occur with use of this drug, patients should be warned of this possibility and cautioned against driving a car or operating dangerous machinery.

Usage in Children: Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy. See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

More detailed professional information available on request.

ROERIG Pfizer
A division of Pfizer Pharmaceuticals
New York, New York 10017

Antivert®/25

(meclizine HCl) 25 mg. Tablets
for vertigo*

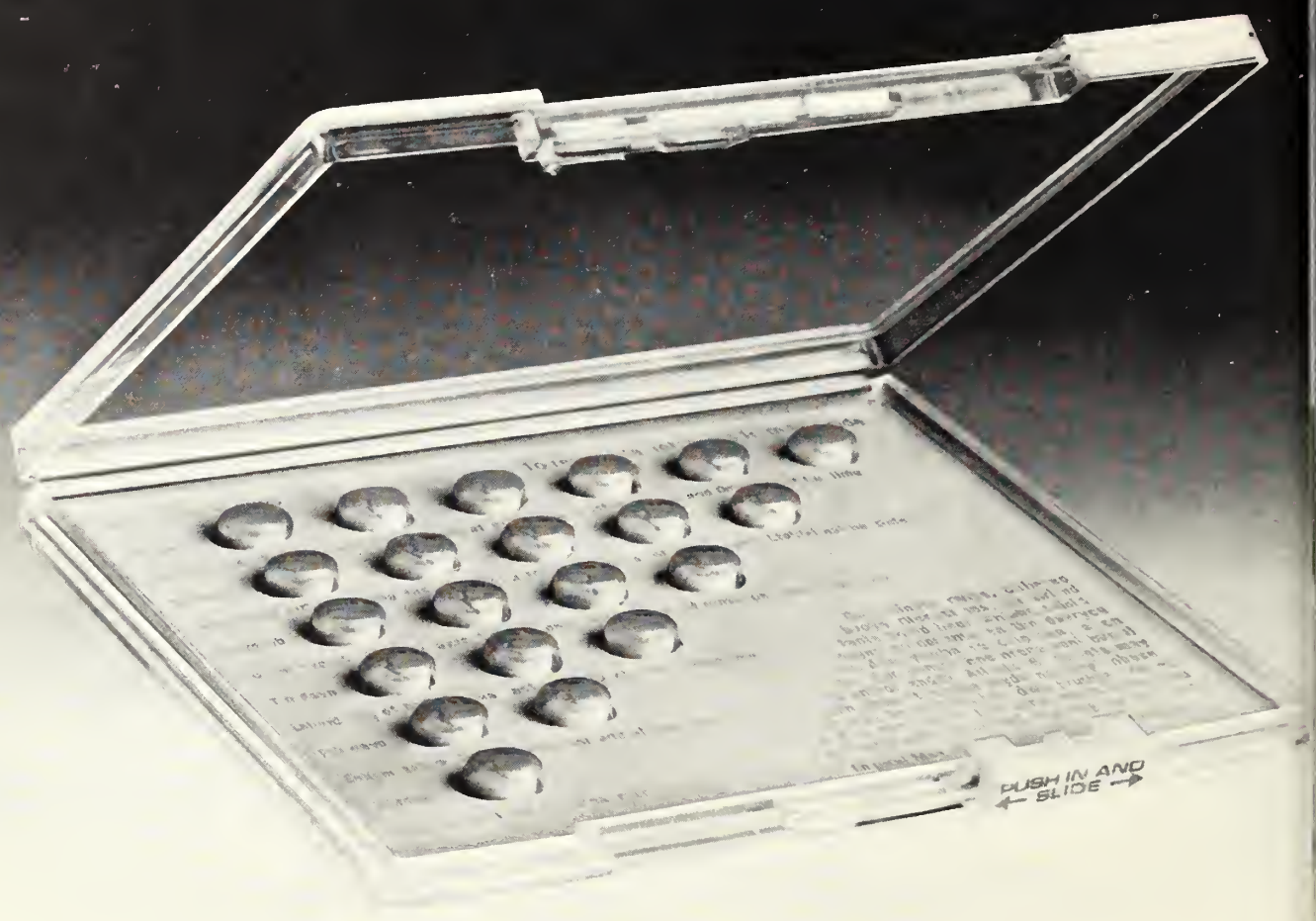
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The Upjohn Company, Kalamazoo, Michigan 49001

Medrol® 4 mg Dosepak*

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The explicit printed dosage instructions that accompany each Dosepak make it easy for the patient to understand and follow the dosage regimen.



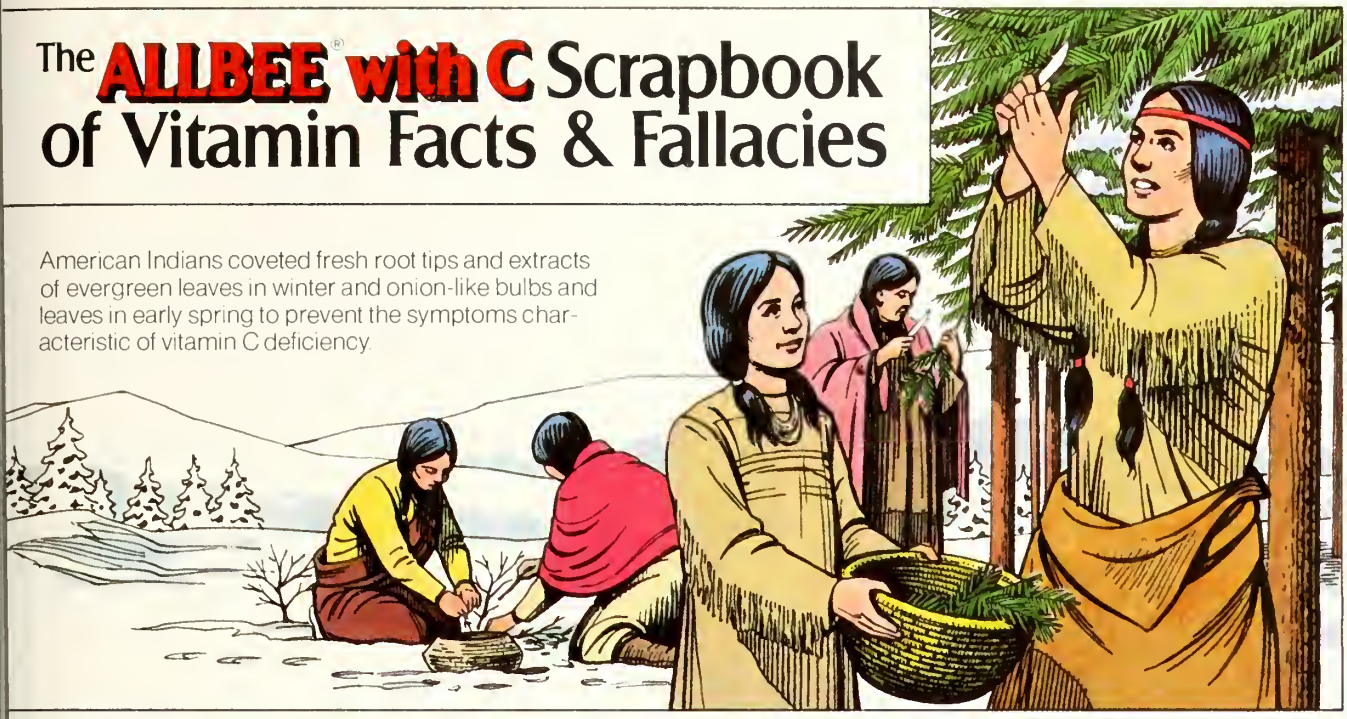
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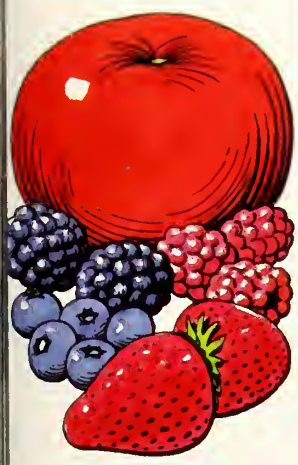
J 5741-4

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The ALLBEE® with C Scrapbook of Vitamin Facts & Fallacies

American Indians coveted fresh root tips and extracts of evergreen leaves in winter and onion-like bulbs and leaves in early spring to prevent the symptoms characteristic of vitamin C deficiency.

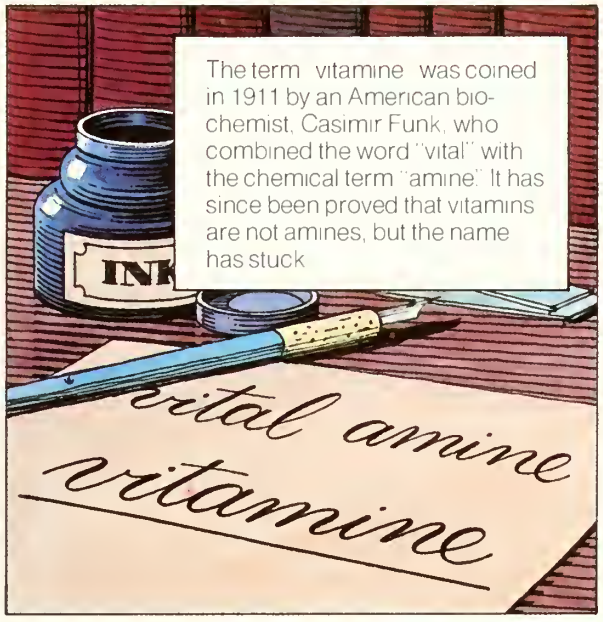




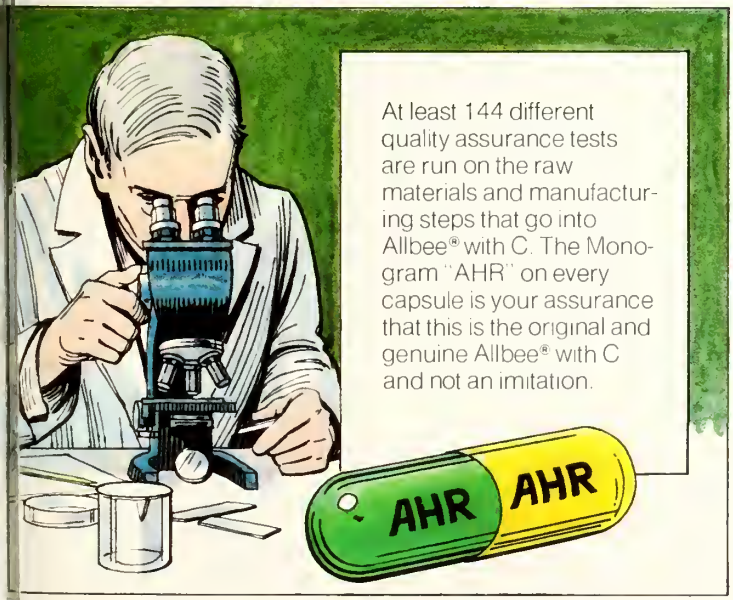
A tomato is botanically classified as a berry!



It is ironic that many of the vegetables highest in vitamin C and riboflavin are considered unappetizing by many people. These include turnip greens, kale, chard, mustard greens, spinach, water cress, broccoli and brussels sprouts.



The term "vitamine" was coined in 1911 by an American biochemist, Casimir Funk, who combined the word "vital" with the chemical term "amine." It has since been proved that vitamins are not amines, but the name has stuck.

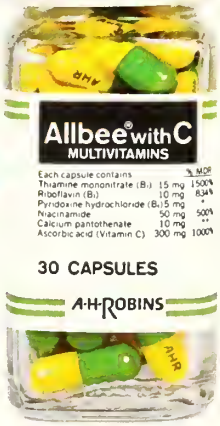


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Spasm reactor?

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	each tablet, capsule or 5 ml tsp of elixir (23% alcohol)	each Donnatal No. 2 Tablet
Phenobarbital (warning: may be habit forming)	(¼ gr) 16.2 mg	(½ gr) 32.4 mg
Hyoscyamine sulfate	0.1037 mg	0.1037 mg
Atropine sulfate	0.0194 mg	0.0194 mg
Hyoscine hydrobromide	0.0065 mg	0.0065 mg

Indications: Based on a review of this drug by the NAS/NRC and/or other information, FDA has classified the following indications as possibly effective: adjunctive therapy in the treatment of peptic ulcer, the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis. Final classification of the less-than-effective indications requires further investigation.

Brief summary. Contraindicated in patients with glaucoma, renal or hepatic disease, obstructive uropathy (for example, bladder neck obstruction due to prostatic hypertrophy) or a hypersensitivity to any of the ingredients. Blurred vision, dry mouth, difficult urination, and flushing or dryness of the skin may occur at higher dosage levels, rarely at the usual dosage.

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THE RHODE ISLAND MEDICAL SOCIETY

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Dear Doctor:

On November 18, 1975, the Medical Economics Committee voted to approve a new state-wide plan of Disability Insurance underwritten by the Commercial Insurance Company of Newark, New Jersey, and a new administrator, Lester L. Burdick, Inc., 20 Congress Street, Boston, Massachusetts 02109.

Your Committee selected this well-known team of administrator and insurer for the new Disability Insurance Program due to its record of performance and local service in administering Professional Societies' programs in the Rhode Island and Massachusetts area. Similar plans have been in force for the Rhode Island Dental Society since 1959, Massachusetts Dental Society since 1942, and Massachusetts Medical Society since 1962.

Some of the outstanding features of our New Program include:

1. Guaranteed Renewable;
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4. Special Fracture Benefit;
5. High-limit Dismemberment;
6. Both Long-term and Short-term Disability Income Plans.

For full information concerning this New Program, we urge you to return the enclosed card to our administrator today.

Sincerely,

Stephen J. Hoye M.D.

Stephen J. Hoye, M.D.
President

Kenneth E. Liffmann

Kenneth Liffmann, M.D.
Chairman, Medical Economics Committee

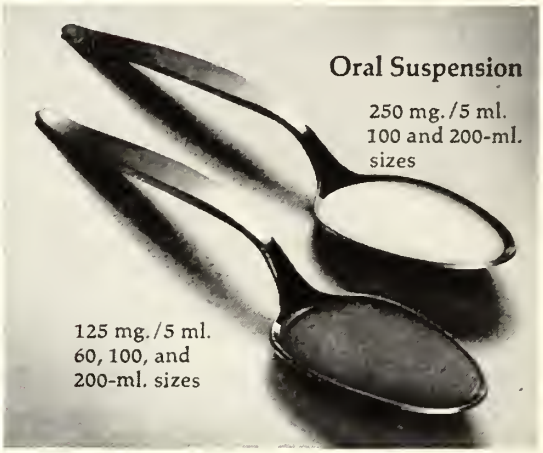
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An Introduction: The Program In Medicine, Class Of 1977

By Stanley M. Aronson, M.D.

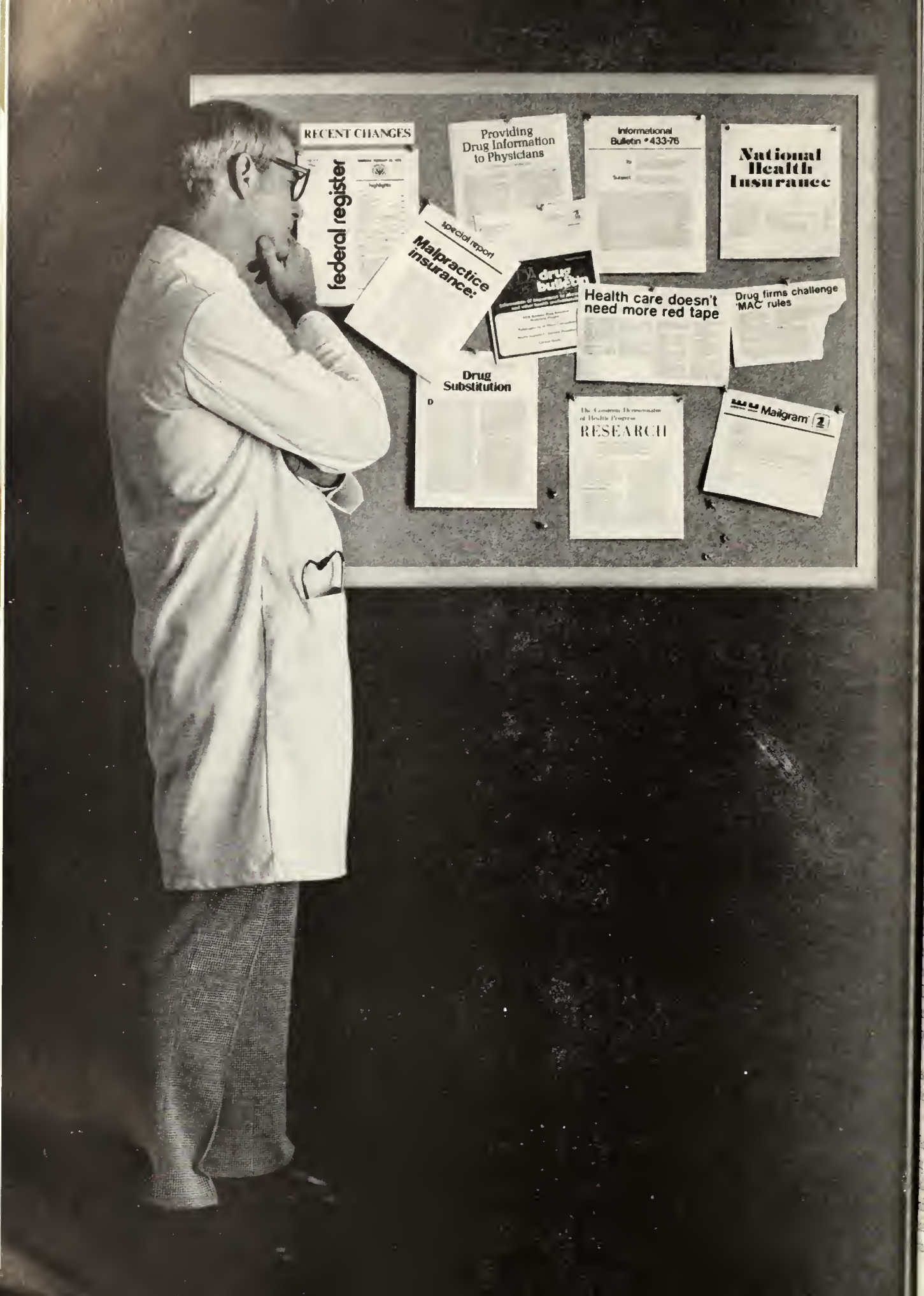
The enthusiasm and joy which attended the commencement exercises of our first class of medical students in 1975 seems to be undiminished as we anticipate the graduation of Brown's third contingent of physicians. The persons in the Class of 1977, 61 in number, are proudly identified in this issue of the Journal. Each of these men and women has successfully completed a rigorous and difficult four years of disciplined training, some 7,400 formal hours of supervised experience in the theory and realities of human illness. A part of this training took place in conventional classroom and laboratory settings; most of it, however, was accomplished in the intimacy of preceptorships with single students working closely with individual clinicians. A special chemistry seems to be generated by this kind of educational interaction, for it yields gratifying personal fulfillment in both participants, and it has now emerged as the major teaching mode in the Brown medical program. In addition to the full-time faculty, about 400 practicing physicians of the greater Rhode Island community generously serve to insure the success of this preceptorship effort.

The faculty satisfaction which accompanies this graduation arises from a sense that these 61 men and women have exploited well their four years of training; that they are endowed with sufficient wisdom to distinguish between the limited amount they have learned and the vast amount yet to be learned; that they are profoundly aware of the broader nonbiologic forces within society which are the formidable determinants of health or its lack; that they know the importance to medicine of scholarly pursuit in domains other than medicine; that they are as sensitive to tears as they are to joy; and finally, that the occasionally dehumanizing hardships of these years of formal education will not have alienated them from the multitude who will seek their services.

On behalf of our faculty, I am pleased and honored to welcome this Class of 1977 to the ranks of medicine, confident that both society and our profession shall now be the richer.

STANLEY M. ARONSON, M.D., *Dean of Medicine, Brown University.*

Division of Biological and Medical Sciences
Brown University
Providence, Rhode Island 02912


RECENT CHANGES
federal register
Providing Drug Information to Physicians
Informational Bulletin • 433-76
National Health Insurance
special report
Malpractice insurance:
drug
Health care doesn't need more red tape
Drug firms challenge 'MAC' rules
Drug Substitution
RESEARCH
Mailgram

THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all kinds of scrutiny. Your control over patient therapy is being monitored, judged and occasionally abrogated, sometimes by unknown third parties.

The worry is that in the wake of this focus, the relationship between you and your patient will be weakened, without offsetting benefits. Consider three examples:

Drug substitution In most states, pharmacy laws, regulations or professional custom stipulate that your non-generic prescriptions be filled with the precise products you prescribe. But in the last five years, a dozen or more State laws have been changed, permitting the pharmacist in most cases to select a product of the same generic drug to fill any prescription.

Ironically, this dilution of physician control has taken place against a background of growing evidence that purportedly equivalent drug products may be inequivalent, since neither present drug standards nor their enforcement are optimal. In fact, the FDA itself says it has not enforced the same standards for hundreds of "follow-on" products that it had applied to the original NDA approvals. Thus physician control over patient therapy is being eroded with a risk that patients may be exposed to drugs of uncertain quality.

The major advertised claim for substitution is reduced prescription prices for consumers. Yet no documentation of any significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is a federal regulation designed to cut the Government's drug bill by setting price ceilings for drugs dispensed to Medicare and Medicaid patients. Unless the prescriber certifies on the prescription that a particular product is medically necessary, the Government intends to pay only for the cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

It could make a difference in your practice tomorrow.

P·M·A
Pharmaceutical Manufacturers Association
1155 Fifteenth Street, N.W., Washington, D.C. 20005

The Oath Of Asaph And Jochanan

This Oath Is Found At The End Of The Medical Work By Asaph The Physician Who Lived In Israel In The Sixth Century A. D. The Oath Was Administered By The Jewish Teachers Of Medicine When Awarding Diplomas To Their Students

And this is the oath administered by Asaph, the son of Berachyahu, and by Jochanan, the son of Zabda, to their disciples; and they adjured them in these words: "Take heed that ye kill not any man with the sap of a root; and ye shall not dispense a potion to a woman with child by adultery to cause her to miscarry; and ye shall not lust after beautiful women to commit adultery with them; and ye shall not disclose secrets confided unto you; and ye shall take no bribes to cause injury and to kill; and ye shall not harden your hearts against the poor and the needy, but heal them; and ye shall not call good evil or evil good; and ye shall not walk in the way of sorcerers to cast spells, to enchant and to bewitch with intent to separate a man from the wife of his bosom or a woman from the husband of her youth. And ye shall not covet wealth or bribes to abet depraved sexual commerce. And ye shall not make use of any manner of idol-worship to heal thereby, nor trust in the healing powers of any form of their worship. But rather must ye abhor and detest and hate all their worshippers and those that trust in them and cause other to trust in them, for all of them are but vanity and of no avail, for they are naught; and they are demons. Their own carcasses they cannot save; how, then, shall they save the living? And now, put your trust in the Lord your God, the God of truth, the living God, for He doth kill and make alive, smite and heal. He doth teach man understanding and also to do good. He smiteth in righteouness and justice and healeth in mercy and lovingkindness. No crafty device can be concealed from Him, for naught is hidden from His sight. He causeth healing plants to grow and doth implant in the hearts of sages skill to heal by His manifold mercies and to declare marvels to the multitude, that

all that live may know that He made them, and that beside Him there is none to save. For the peoples trust in their idols to succour them from their afflictions, but they will not save them in their distress, for their hope and their trust are in the dead. Therefore it is fitting that ye keep apart from them and hold aloof from all the abominations of their idols and cleave unto the name of the Lord God of all flesh. And every living creature is in His hand to kill and make alive; and there is none to deliver from His hand. Be ye mindful of Him at all times and seek Him in truth and uprightness and rectitude that ye may prosper in all that ye do; then He will cause you to prospect and ye shall be praised by all men. And the peoples will leave their gods and their idols and will yearn to serve the Lord even as ye do, for they will perceive that they have put their trust in a thing of naught and that their labour is in vain; (otherwise) when they cry unto the Lord, He will not save them. As for you, be strong and let not your hands slacken, for there is a reward for your labours. God is with you when ye are with Him. If ye will keep His covenant and walk in His statutes to cleave unto them, ye shall be as saints in the sight of all men, and they will say: "Happy is the people that is in such a case; happy is that people who God is the Lord." And their disciples answered them and said: All that ye have instructed us and commanded us, that will we do, for it is a commandment of the Torah, and it behooves us to perform it with all our heart and all our soul and all our might: to do and to obey and to turn neither to the right hand nor to the left. And they blessed them in the name of the Highest God, the Lord of Heaven and earth. And they admonished them yet again and said unto them: Behold, the Lord God and His saints and His Torah be witness unto you that ye shall fear Him, turning not aside from His commandments, but walking uprightly in His statutes. Incline not to covetousness and aid not the evildoer to shed innocent blood. Neither shall ye mix poisons for a man or a woman to slay his friend therewith; nor shall ye reveal which roots be poisonous or give them into the hand of any man, or be persuaded to evil. Ye shall not cause the shedding of blood by any manner of medical treatment. Take heed that ye do not cause a malady to any man; and ye shall not cause any man injury by hastening to cut through flesh and blood with an iron instrument or by branding, but shall first observe twice and thrice and only then shall ye give your counsel. Let not a spirit of haughtiness cause you to lift up your eyes and your hearts in pride. Wreak not the vengeance of hatred on a sick man; and alter not your prescriptions for them that do hate the Lord our God, but keep his ordinances and commandments and walk in all His ways that ye may find favour in His sight. Be ye pure and faithful and upright."

Thus did Asaph and Jochanan instruct and adjure their disciples.

Physicians. Isn't It Time Your Career Had A Check-Up?



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A Tribute . . .

We graduating seniors are indebted to a great many individuals who in some way contributed to our education. Volunteer and full time faculty, secretaries, and administrators have all been friends and advocates.

Symbolic of the concern, dedication, and regard of students that typifies all those who serve the Medical Education Program at Brown, and the one person who has done more than any other, is Stanley M. Aronson, M.D. Our dean has directly and indirectly served every one of us as ombudsman, counselor, administrator, and instructor. We thank him and the many others for their efforts to make us physicians.



Stanley M. Aronson, M.D.

Class Of 1977 Brown University Program In Medicine

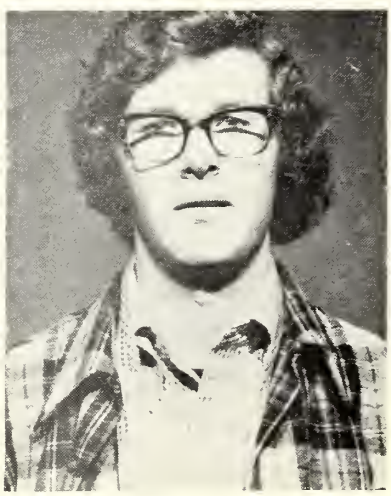
As in years past, the medical graduating class at Brown is a diverse group. Graduates' ages range from 23 to 44, and the native states range from Massachusetts to California. Many are undertaking Medicine after already pursuing a different career, including physics, engineering, and writing. Experiences of the seniors include ballet, acting, musical performance, and horse tending.

Certainly, such a variety of backgrounds has served to enrich the experience of learning medicine. Perhaps it accounts for the variety of locales where the graduates will serve internship.

We present, from bayou and jetty, mountain and prairie, the Class of 1977, Medical Education Program, Brown University.



PERI L. ALDRICH, University of Wisconsin, Family Practice, Waukesha Memorial Hospital



ALEXANDER BALKO, Albany Medical College, Surgery, Albany Medical Center



GREGORY F. BIANCONI, Brown University, Family Practice, The Memorial Hospital



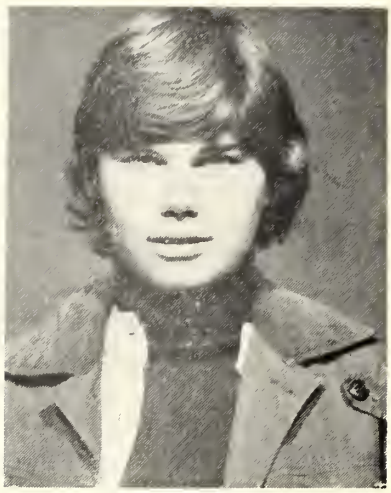
ROBERT D. BIGLER, University of Pittsburgh, Medicine, Montefiore Hospital



DANIEL J. BLOCH, University of South Carolina, Family Practice, Medical Center Hospitals



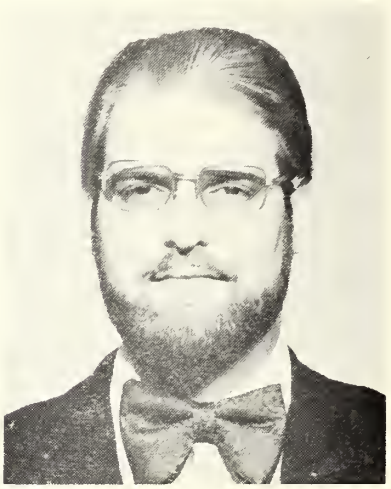
SUSAN BROWNE, Boston University, Pediatrics, Boston City Hospital



NORA BURGESS, University of Texas, San Antonio, Surgery, U. of Texas Hospital



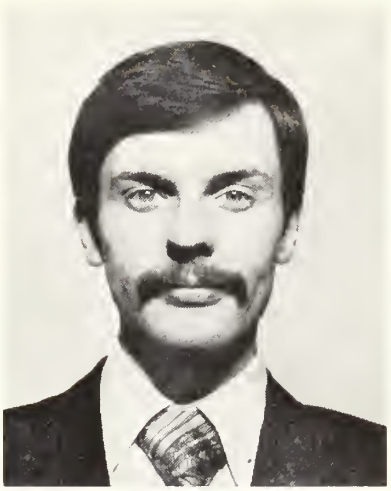
GARY CANNER, University of Pennsylvania, Surgery, University of Pennsylvania Hospital



H. WAYNE CARVER, University of Chicago, Surgery, University of Chicago Hospital.



ROSLYN CHOSAK, Brown University, Ob/Gyn, Women and Infants Hospital of R.I.



AKIM F. CZMUS, Thomas Jefferson University, Medicine, Thomas Jefferson University Hospital



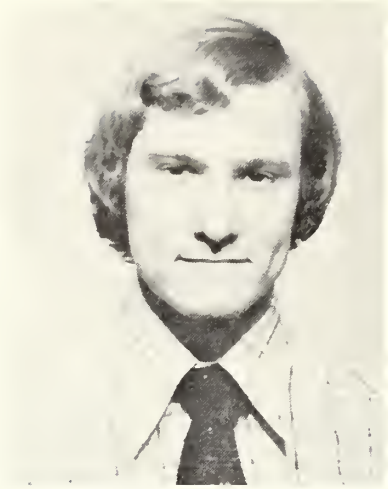
DEBORAH A. DeHERTOGH, Rush Medical College, Medicine, Presbyterian-St. Luke's Hospital



WALTER E. DONAT, Brown University, Medicine, Rhode Island Hospital



MITCHELL H. DRIESMAN, Tufts University, Medicine, New England Medical Center



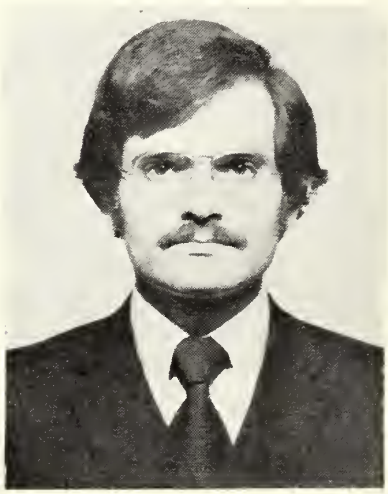
JOHN A. EGELHOFER, Tufts University, Medicine, Bay State Medical Center



STEVEN N. EMANCIPATOR, New York University, Pathology, New York University Medical Center



JOHN E. EMMEL, University of South Carolina, Family Practice, Medical Center Hospitals



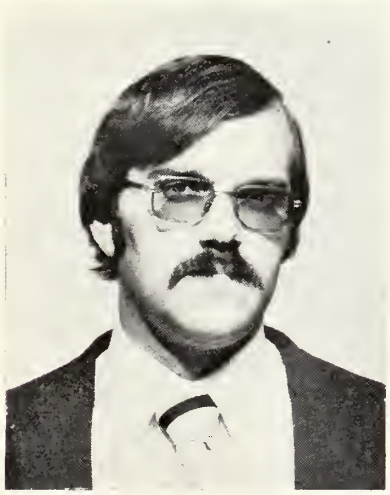
DAVID FEINER, Case Western Reserve University, Surgery, Mount Sinai Hospital, Ohio



STEVEN H. FEINSILVER, Boston University, Medicine, Boston University Hospitals



BARBARA M. FELDMAN, Albany Medical College, Medicine, Albany Medical Center



DAVID P. FLETCHER, Washington University, Pediatrics, St. Louis Children's Hospital, Missouri



STEVEN C. FLOOD, Brown University, Family Practice, The Memorial Hospital

"It Was The Best Of Times, It Was The Worst Of Times"

By Phyllis Ann Margaret Hollenbeck

For Marcel Proust it was a "petit madeleine" — after taking barely one bite of that delicate cookie, he was transported back in time and place and feeling to the circumstances in which he had had his first taste of such a treat. A seemingly forgotten memory was brought to life by the unlikely catalysts of his tongue and his nose, and their associated senses. To his great surprise the petit madeleine became his time machine, and for a little while he relived a part of his past. And so, years from now, who knows what small but significant sights or sounds, tastes, touches, or "whiffs" of something will suddenly catapult one of us back into a scene from these first four years of learning how to be a doctor.

Maybe it will happen one day when one of us sits down on a hard, round seat that has no back — and abruptly "feels" transported back to the anatomy amphitheater, that first year. And what a "motley" group walked into that lecture hall that first day: seven-year "Med-Scis" next to history and English and psychology and engineering majors, next to a mother of four, next to an ex-physics professor who was to become a mother by the end of our first year. These were people who had traveled various and sometimes circuitous routes (e.g. via the Navy) from their undergraduate educations to the beginning of medical school. The only things we all shared that day were the magisterially prescribed "premed" courses, a certain sense of acute anxiety — and the all-too-painful realization that on those "seats," a comfortable position was decidedly an impossible dream.

Ah, the smell of the formaldehyde and the quiet of that crowd — four of us to a long, metal table, with a "silent partner" stretched out on each table. With deep dedication and determination we dissected "our" cadavers. We named 'em and we "maimed" 'em, all to find the course and relations of the radial nerve. We sawed ladies (and men) in half; we came to know the intimate details of John Hunter's life. We learned what was "wrong" with Rembrandt's **The Anatomy Lesson** — and, amazingly, we learned our own anatomy lessons.

So that first semester became a part of the past — somehow we had survived a rite of initiation. The "rites of Spring" semester came next. There were bacteria with "exquisitely" unpronounceable and anything but memorable (except perhaps for the genus Providencia!) names; if it was Tuesday, then it was pathology slides — funny how liver could look so much like lung. And, somehow, I don't think any of us will ever be able to play ping-pong again without being fondly reminded of pharmacology.

But all that passed, too, and we passed — it was on to our "Introduction to Physical Diagnosis." To this day we may be able neither to say nor spell "Sphygmomanometer,"

PHYLLIS ANN MARGARET HOLLENBECK, *member of the Brown University program in medicine graduating class of* 1977.

but that summer we learned how to use one. God, we had beautiful new equipment: shiny stethoscopes, **blue** blood-pressure cuffs, "super-magnalume-fiberoptic oto-ophthalmoscopes." But damnit, you still couldn't find the tympanic membrane with the "thing," that is, if you remembered to recharge it. You had four different sets of earpieces for your stethoscope, and none of them fit your ears. We were told that, from this day onward, we would be allowed by society to do amazing things to other human beings — yet we still felt less than confidently prepared to begin "the laying on of hands" on the patient. So we fortified ourselves with repeating the litany of Inspection, Palpation, Percussion, and Auscultation, and set out to track down such beautifully- named things as bruits and tenesmus.

Now, I have little doubt that the sight of any basement room, with blue carpeting, too many chairs, and no windows, can cause an acute claustrophobic reaction in most of my classmates. We spent at least six-sevenths of our second year in just such a room — it was the "information booth" for the widely-advertised Integrated Medical Sciences. For as long as we live, those three initials — IMS — in no matter how different the context, will always mean only one thing to those of us who shared that year. We counted the days off, one by one — somehow the weeks went by, the faces of the professors who stood before us changed, the tandem tests were studied for and survived. On a person-to-person level we all certainly saw a lot of each other — and when we weren't all looking at each other in B-13, we were all looking at each other on some floor of our monolithic second-home, the Sciences Library.

Finally we were in our clinical years: working-up patients, wearing white coats, being on every third night just like "real" doctors. In trying to learn the art of "finding a vein," it was truly the joy of victory, and the agony of defeat. We learned to throw around the phrase "within normal limits" (whatever that means). We jumped from hospital to hospital, from surgery to psychiatry. We caught babies, sewed-up kids' chins, helped tie tubes, and ran to "codes" at three o'clock in the morning. Those of us on a clerkship together became close friends for that time. We got to know attendings, residents, nurses — and, most importantly, "our" patients.

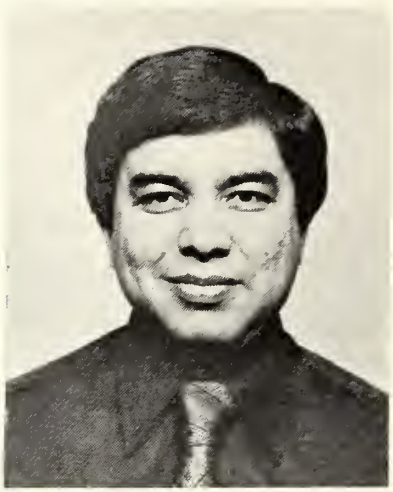
Much of this last, our fourth, year has been spent in finding a place for next year. The moment of truth had arrived: just what kind of doctor did you want to be anyway, and where did you want to be it? You sat down with a green book full of residencies and started writing away for applications. Then all the applications had to be done in duplicate — and somewhere they all had a variation on the dreaded theme: "Write a (brief) essay on why you want to train in" — Internal Medicine, Pediatrics, Surgery, Family Practice, Psychiatry, Pathology — or whatever. Then you needed transcripts, and pictures — and Oh God! what kind of recommendations did you have? But that part was easy compared to going on fifteen residency interviews in locations that spanned the continental United States — when you were also supposed to be doing your elective clerkship. Between the flying and the driving and the never knowing what that day's meals or that night's bed would be like, and still having to present yourself as somehow outstanding compared to all the other fourth-year medical students trying for that job — well, there had to be times when you wondered if it would ever work out. But you kept reaching for that residency — subconsciously you must have been operating according to the following philosophy from Mark Twain: "Training is everything . . . cauliflower is nothing but cabbage with a college education."

So now we stand on the brink of "doctorhood" — two more initials are to be added to our signatures. Looking back over the past four years, I think we would agree with this thought from Mencius (372-289 B.C.): "When heaven is about to confer a great office to any man, it first exercises his mind with suffering and his sinews and bones with toil." And I also feel that we would agree that our M.D. degree truly confers a great and significant office upon each of us. I feel that we are destined to be serious physicians with great personal styles, just as we began as a class of truly individual and "atypical" medical students. We are sensitive to our patients as persons, and we see that sensitivity as a

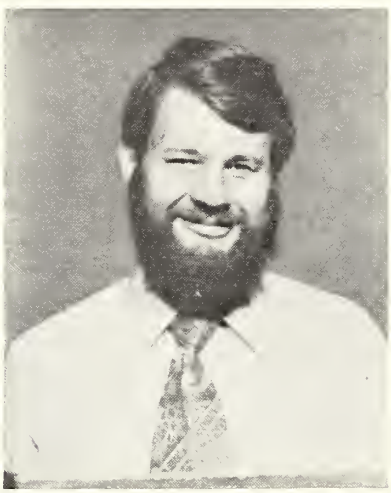
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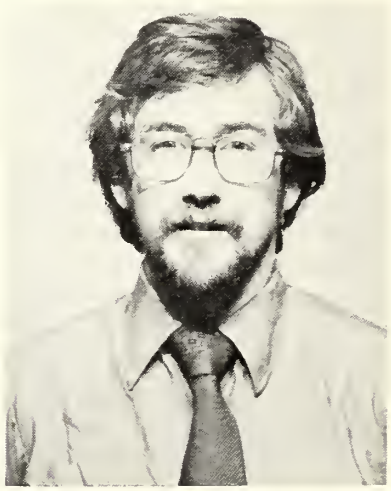
CAROL J. FRANKLIN, Brown University, Medicine, Rhode Island Hospital



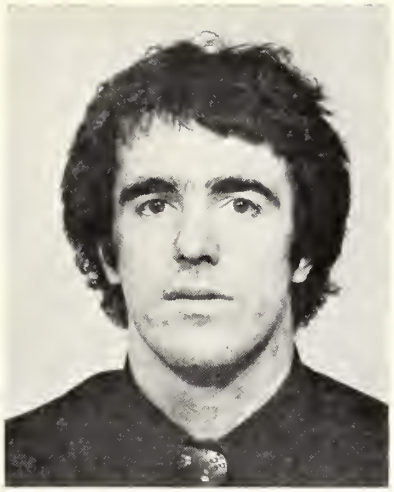
PETER FREDERICKS, Baylor Medical College, Family Practice, Baylor College Hospital



MICHAEL J. FULLER, Tufts University, Medicine, St. Elizabeth's, Massachusetts



DAVID GAGNON, Madigan Army Medical Center, Family Practice



RICHARD N. GAGNON, University of Michigan, Orthopedic Surgery, Henry Ford Hospital



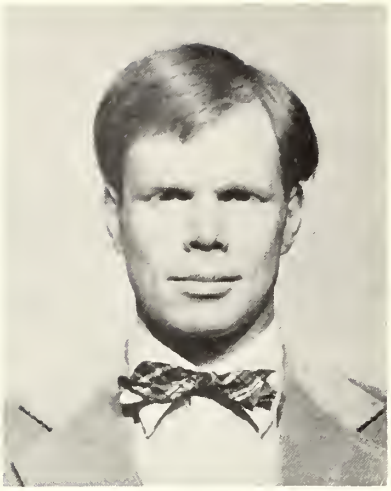
ROBERT B. GEORGE, Columbia University, Family Practice, Overlook Hospital



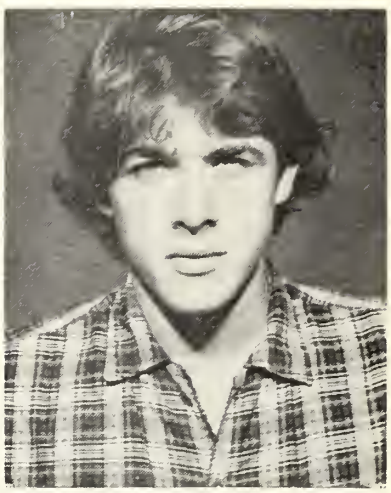
THOMAS L. GOODMAN, Brown University, Medicine, Rhode Island Hospital



CLAUDIA B. GRUSS, Brown University, Medicine, Rhode Island Hospital



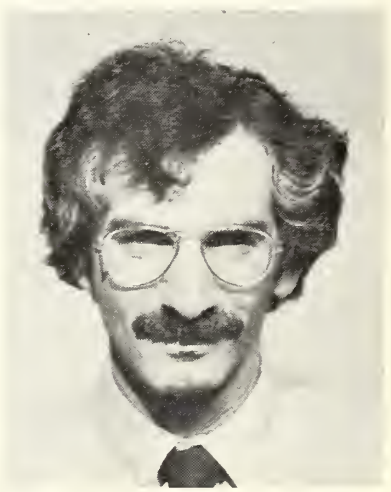
MARK E. HAFFENREFFER, University of California, San Francisco, Surgery, University of California Hospital



ANDREW F. HALL, Brown University, Medicine, Rhode Island Hospital



PHYLLIS A. HOLLENBECK, State University of New York—Upstate, Family Practice, St. Joseph's Hospital



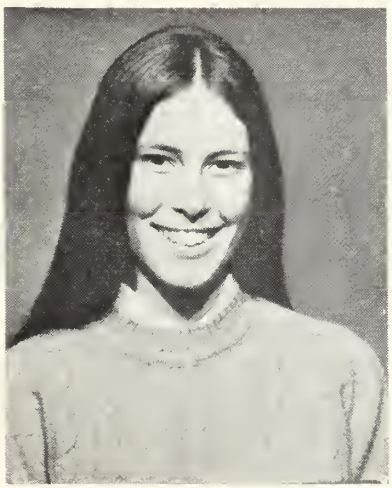
WILLIAM H. KAPLAN, University of Chicago, Psychiatry, University of Chicago Hospitals



KARL J. KARLSON, Johns Hopkins University, Surgery, Johns Hopkins Hospital



KERRY J. KELLY, State University of New York, Downstate, Family Practice, State University Hospital



SUSAN F. LEITMAN, University of Pennsylvania, Medicine, University of Pennsylvania Hospital



JOHN M. LOSEE, University of Colorado, Family Practice, University of Colorado Hospital

On Growing Up: The Students And The Program

By Steven N. Emancipator

With the advent of another commencement at Brown University and the approach of the realization of a lifelong goal, I am wont to gaze about me, observing my surroundings a bit more carefully. There have been countless times in the past several years when I've wished that I were somewhere else, with a job in a hospital. As I now prepare to graduate, I find myself planning to assume a position in a program and begrudge my departure.

It is curious that I have begun to appreciate my status as a student only when I am about to graduate and now seek to consider myself a student for a while longer. Fortunately, it is part of the role of the physician ever to remain a student. I have grown accustomed to inquiry and wonder.

The true student must retain these childlike qualities, for they are the basis of learning. The physician must retain these qualities, but must become fully responsible and mature at the same time. To grow up as a doctor is no easy task.

To be ever anxious for an occasion and suddenly on its very eve seek postponement are intrinsic to the process of growing up. For with the attainment of a dream comes the recognition of reality, and a resultant hesitancy to subjugate the fanciful to the factual. Looking back, I see an awesome and impressive rite of passage.

I chose medicine as a career at about thirteen years of age; my impression was that medicine was an exact science, requiring command of a variety of disciplines, utilized in a rigorous approach to the patient. I expected that practice and research were mutually pursued.

I came to Brown when its goal was to train medical scientists. This was indeed the basis of my selection; I wanted to be a medical scientist. The shift in emphasis of the program and the interest of its students to a primary care oriented clinical curriculum was an unexpected development. The students and the program mature together.

I learned slowly that medicine is not always, or even usually, exact science. Rigorous approach to the patient rapidly gave way to an open empathy with a sick human being. The facts, if not the principles, of differential equations, Fourier analyses, and third order transitions have faded in deference to differential diagnoses, psychoanalyses, and writing orders while in transition.

As I continued through medical school I became enraptured by the singular joys and peculiar problems that are clinical medicine. Every day patients, rounds, conferences provided new experiences and raised puzzling questions. These benefits far outweigh the drudgery of paper work and scut work. Clinical medicine is truly challenging and rewarding, if not exact and rigorous.

Much to my dismay I have discovered that, while the two roles are not mutually exclusive, it is distinctly rare for an individual to be both an effective researcher and a good practitioner of the profession of medicine. I became torn between two loves, exact laboratory science and the art of clinical medicine. Per-

STEVEN N. EMANCIPATOR, *member of the Brown University program in medicine graduating class of* 1977.

haps the most impressive aspect of the curriculum at Brown is that it is responsible for the resolution of my dichotomous interests.

The curriculum allows depth in an area of special interest while providing more than the minimum of expertise and comprehension in all of the basic, clinical, and psychosocial sciences. This not only results in a physician who is well versed in all of the various fields and truly prepared in a field of his choosing, but also insures that the choice can be made intelligently.

It seems that this concurrence of breadth and depth is more prominent at Brown than elsewhere. The enhancement is probably a consequence of the mechanism by which the medical education program came into being.

The first stage of development was the establishment of the Master of Medical Sciences program. The emphasis on the training of medical scientists insured that a good foundation in the principles of science was provided. Consequently, the nascent medical education program was derived from a conceptus rich in rigor and exactitude. But the gestation could not have proceeded, and the neonate would not have been so strong and broad without a good placenta. Nutriment of the developing program was derived from the diversity of the clinical facilities which have become affiliated with the university. To my mind this diversity, which serves to distinguish Brown's program, is a direct consequence of the lack of a university operated hospital. Furthermore, it is apparent that this situation could not have arisen without a remarkable degree of cooperation between the university and the medical community and, indeed, the community in general.

It has been said that the medical education program operates on a shoestring budget. The budget is in fact small compared to that of other schools, even when the class size is taken into account. I do not take this to be a sign of poverty, but rather a sign of economy, an economy made possible by the wealth and richness of a mutually beneficial relation between the university aand the medical community.

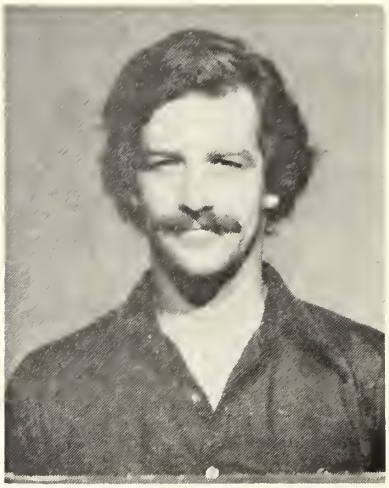
To be sure, as in any human interaction, there have been strains, misunderstandings, and aggravations. Equally certain is the fact that these will continue for years to come. Charges and counterclaims will issue forth, and debates will continue with fervor. Controversy will exist as long as there are alternative opinions, and alternative opinions will persist as long as people try to assess the unmeasurable. Cost to benefit ratios for the program and the community cannot be stated in absolute terms.

It is clear, however, that the relation is strong in spite of, and probably ultimately strengthened by, the controversy. There is no better measure of the quality of the relationship than the caliber of the physician born of that relationship.

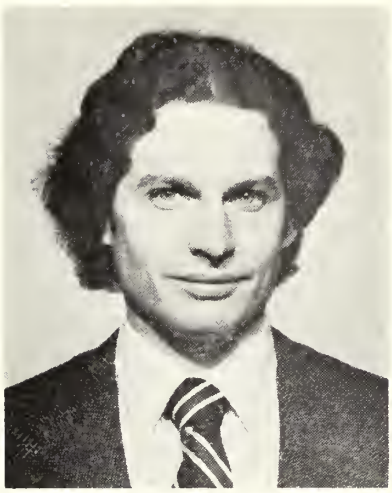
I think that I am not alone among the members of the Class of 1977 in feeling a deep sense of gratitude to the physicians of this state, particularly the voluntary faculty. You have shared your experience with us, allowed us to learn from your patients, and taught us so many intangibles by your examples.

The courtesy of dedicating the May issue of the **Rhode Island Medical Journal** to the graduating seniors strikes me as particularly appropriate; our achievements are in many respects your accomplishments, and our successes are testimony to your abilities. We are proud and fortunate to have studied under you in your institutions, and we thank you for having regarded us as friends and colleagues.





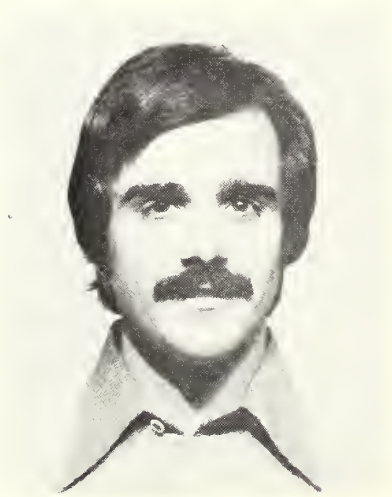
J. PHILLIP MALONEY, University of Washington, Flexible, Sacred Heart Medical Center



ROGER A. MAXFIELD, Georgetown University, Medicine, Georgetown University Hospital



PATRICIA A. McCORMICK, University of Wisconsin, Medicine, Wisconsin University Hospital



DANIEL W. MOORE, Ohio State University, Surgery, Ohio State University Hospital



MARGARET E. PARKER, Brown University, Medicine, Roger Williams General Hospital



STEVEN A. RASMUSSEN, Yale University, Psychiatry, Yale-New Haven Medical Center



ANDREW D. RUTHBERG, State University of New York, Downstate, Medicine, State University Hospital



JOEL I. SHALOWITZ, Northwestern University, Medicine, Northwestern University Hospital



JOHN SHUCK, Tripler Army Medical Center, Family Practice



DEBORAH F. SPITZ, Thomas Jefferson University, Medicine, Thomas Jefferson University Hospital



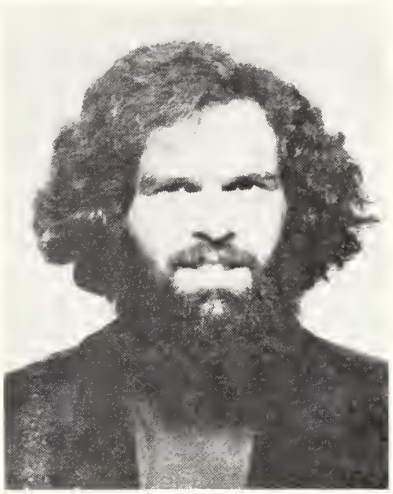
LINDA L. STRONACH, University of North Carolina, Medicine, North Carolina Memorial Hospital



ANNIE M. STRUPP, Cornell University, Pathology, The New York Hospital



PAUL I. TARTTER, Mount Sinai College, Surgery, Mount Sinai Hospital



FRED S. THALER, University of Minnesota, Family Practice, University of Minnesota Hospital



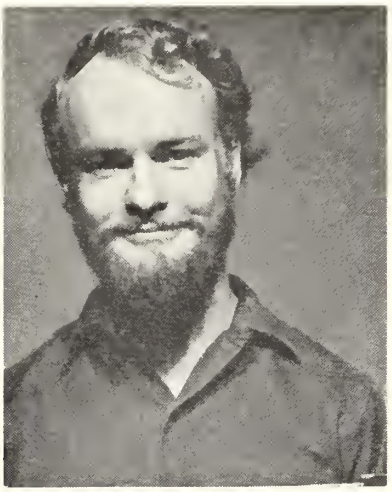
JOHN O. THAYER, Howard University, Surgery, New England Deaconess Hospital



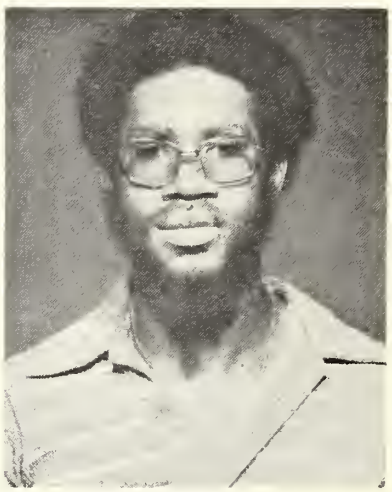
ELAINE M. TUNAITIS, University of Rochester, Medicine, University of Rochester Hospital



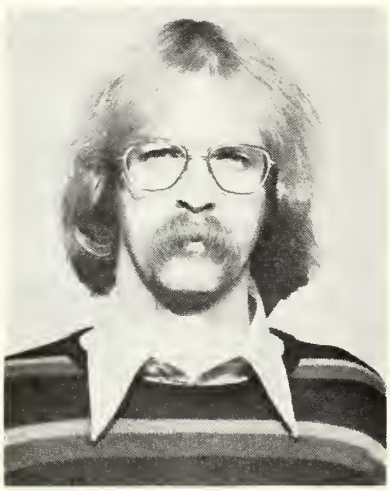
LAURA B. VOGEL, Cornell University, Psychiatry, New York Hospital



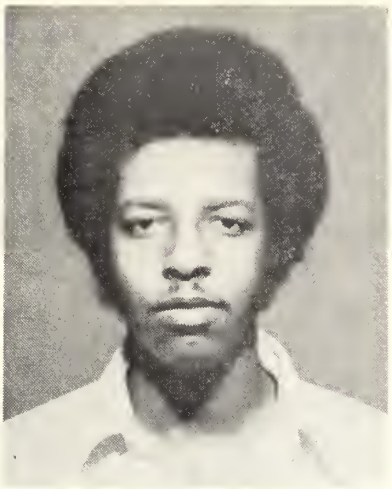
DWIGHT WESLEY, Malcolm Grow USAF Medical Center, Family Practice



CLARENCE L. WILEY, George Washington University, Medicine, Washington Hospital Center



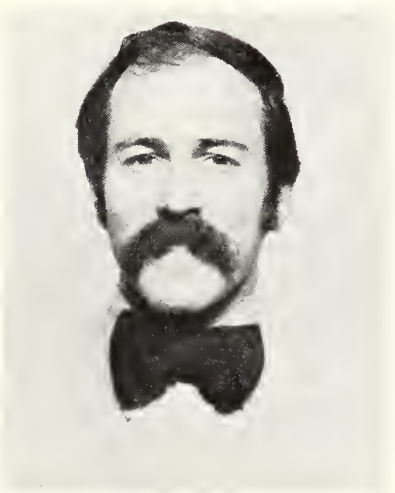
CHRISTOPHER J. WLAZ, Brown University, Surgery, Rhode Island Hospital



KIRK A. WOODSON, Columbia University,
Obstetrics/Gynecology, St. Luke's Hospital



JEFFREY A. YABLONG, Boston University,
Surgery, Boston University Hospitals



ALAN J. ZAMETKIN, Stanford University,
Pediatrics, Stanford University Hospital

A Statistical Profile Of Physicians Issued Licenses By The State Of Rhode Island 1967--1976

By Myra Bergman Ramos, AM
Mary Ellen McCabe, LLB
Stanley M. Aronson, MD

This study summarizes in statistical profile those physicians who were issued by the State of Rhode Island unencumbered, full licenses to practice medicine for the ten-year period covering 1967-1976.

The Health Department of Rhode Island, Division of Professional Regulation, is responsible for the gathering and maintaining of a master list containing the names of all applicants, successful or unsuccessful, for MD licenses. Each candidate issued a license is given a unique number, and his or her name is then listed chronologically in the order of the date of issuance of the license; from this list the authors have obtained the number of MD licenses issued during each year, as well as the names of physicians accorded such licenses.

Each physician issued a license by Rhode Island is also represented in the State Health Department files by a card containing his or her name, license number, preferred mailing address, date and geographic place of birth, medical school and date of graduation, date of issuance of license, and whether the license was granted by examination or endorsement. This information, which is extracted from the license application and supporting credentials submitted by each physician, was the primary source of the data incorporated into this study. No attempt was made to verify any of the information on these cards by communication with the individual physicians.

MYRA BERGMAN RAMOS, AM, *Coordinator of Clinical Clerkships, Office of Medical Affairs, Division of Biology and Medicine, Brown University*
MARY ELLEN McCABE, LLB, *Administrator, Division of Professional Regulation, Rhode Island Department of Health*
STANLEY M. ARONSON, MD, *Dean of Medicine, Office of Medical Affairs, Division of Biology, and Medicine, Brown University.*

FINDINGS

Table 1 incorporates information regarding the number of physician license applications, the number of applicants (distinguishable from the former since an applicant may apply more than once in a given year), and the percentage of applications resulting in Rhode Island licensure per year. In the decade surveyed 1,273 new licenses were issued.

The percentage of successful applications for MD licensure in the state of Rhode Island has never dropped below 80 per cent. These data in terms of trend, however, are difficult to interpret, since prior to June of 1972 a State Board Examination was used, while in June of 1972 the more rigorous FLEX (Federation Licensing Examination) was adopted. On average, the percentage of successful applicants seems lower since the FLEX was instituted.

The number of MD licenses issued throughout the United States per year of this survey appears to stabilize in 1973 and the years beyond. In contrast, the number of licenses issued in Rhode Island continued to rise beyond 1973.

TABLE 1
NUMBERS OF M.D. LICENSES ISSUED BY THE STATE OF RHODE ISLAND, 1967-76

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	TOTAL 1967-76
A. No. of M.D. License Applications (R.I.)[1]	102	109	111	116	113	137	177	181	194	208	1,448
B. No. of M.D. License Applicants (R.I.)[1]	99	103	111	116	112	137	173	179	189	198	1,417
C. No. of M.D. Licenses Issued (R.I.)	91[2]	93	105	111	110	134	147	153	160	169	1,273
D. % of applications resulting in R.I. Licenses [C/A x 100]	89.2%	85.3%	94.6%	95.7%	97.3%	97.8%	83.1%	84.5%	82.5%	81.3%	87.9%
E. No. of M.D. Licenses Issued (U.S.)	20,190[3]	21,816[3]	23,662[3]	26,221[3]	29,406[3]	33,400[3]	36,462[4]	35,816[5]	36,621[5]	not avail.	——
F. Ratio of R.I. Licenses/U.S. [C/E]	.0045	.0043	.0044	.0042	.0037	.0040	.0040	.0043	.0044	——	——

[1]A physician may stand for a license examination more than once in a given calendar year. A physician who re-applies during a subsequent year will be re-counted among the applicants for that subsequent year.
[2]Not including one license which was approved but not issued.
[3]**Medical Licensure** Statistics for 1975, Council on Medical Education of the American Medical Association, September 1, 1974, page 7, Table 3.
[4]Op. cit., p. 6, Table 1.
[5]Data provided verbally by Mr. Henry Mason, American Medical Association, on February 10, 1977.

The sex of each physician is not explicitly noted on the cards mentioned above; the number of women physicians issued licenses during each of these years is therefore estimated from the names in the master list. Since it was not always possible to distinguish which names were those of women, the estimates of sex ratio are likely to be inaccurate (These indicate that, of the physicians who were issued licenses in Rhode Island, women appear to constitute approximately 3.8 per cent during 1967-1970, 6.8 per cent during 1971-1973, and 11.3 per cent during 1974-76. Although these figures represent imprecise estimates, the percentage of new licensees who were women seems to have risen steadily in the period under survey.)

The average age of those physicians obtaining licensure in each year of this survey is shown in Table 2. These averages varied from 33.9 to 36.2 years, with an overall average of 34.7 years, but did not show any significant trend.

Table 3 summarizes the places of birth of the Rhode Island MD license recipients for each year of this study. Of the 1,273 physicians whose records were reviewed, 844 were born in the United States or Canada (66.3 per cent), while 429 were born elsewhere (33.7 per cent). Between 1967 and 1973, the data indicate an irregular rise in the fraction of license recipients who were foreign-born. Since 1973 (when 44.2 per cent of new licensees were foreign-born), the fraction of those who were foreign-born has dropped. The actual number of foreign-born new licensees has diminished somewhat in the last two years (assuming an average for this

(Continued on next page)

TABLE 2
AVERAGE AGE OF PHYSICIANS ISSUED LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Initial license issued in Year	Average age of physicians issued licenses
1967	34.9
1968	36.2
1969	34.0
1970	34.6
1971	35.7
1972	34.3
1973	33.9
1974	34.7
1975	34.7
1976	34.3
AVERAGE 1967-1976	34.7

TABLE 3
PLACE OF BIRTH OF PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-76

Initial License Issued in Year	A No. of physicians issued licenses	B U.S. and Canadian-born physicians No.	B % [B/A x 100]	C. Foreign-born physicians No.	C % [C/A x 100]
1967	91)	59)	64.8)	32)	35.2)
1968	93)	54)	58.1)	39)	41.9)
1969	105 =400	71 =260	67.6 =65.0%	34 =140	32.4 =35.0%
1970	111)	76)	68.5)	35)	31.5)
1971	110)	68)	61.8)	42)	38.2)
1972	134 =391	80 =230	59.7 =58.8%	54 =161	40.3 =41.2%
1973	147)	82)	55.8)	65)	44.2)
1974	153)	99)	64.7)	54)	35.3)
1975	160 =482	124 =354	77.5 =73.4%	36 =128	22.5 =26.6%
1976	169)	131)	77.5)	38)	25.5)
TOTAL—1967-1976	1,273	844	66.3%	429	33.7%

decade of approximately 43 per year), while the absolute number of US and Canadian-born has risen substantially from 59 in 1967 to 131 in 1976.

Table 4 summarizes the data, expressed per year of the survey, with regard to the new licensees born in the United States and Canada, and specifically those physicians who had been born in this state.

While US and Canadian-born physicians constitute an increasing fraction of the MD's issued new licenses in recent years, a decreasing percentage of those physicians was born in Rhode Island. To some measure this may reflect the fact that Rhode Island as a state did poorly in placing its young men and women within the medical schools of the United States, particularly in the years 1969-73. Since there is some parallel between where one is born and where one plans to establish medical practice, the paucity of medical school admissions among Rhode Islanders may contribute to the fact that fewer than 10 per cent of those physicians issued licenses in Rhode Island after the year 1970 were actually born in the state. In one year, 1974, less than 4 per cent of physicians issued licenses (6 out of 153) claimed birth in the state of Rhode Island.

In recent years there has been a substantial reversal in the rates at which Rhode Islanders have been admitted to American medical schools. Indeed, while the national increase was 18 per cent, Rhode Island showed a 115 per cent increase in acceptance rates between 1970 and 1976. In 1970, 2.6

TABLE 4
RHODE ISLAND-BORN PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Initial License issued in Year	A No. of Physicians issued licenses	B U.S. & Canadian-born physicians No.	B % of total [B/A x 100]	C Physicians born in Rhode Island No.	C % of U.S. & Canadian-born physicians [C/B x 100]	D Physicians born in rest of U.S. & Canada No.	D % of U.S. & Canadian-born [D/B x 100]
1967	91	59	64.8	14	23.7	45	76.3
1968	93	54	58.1	16	29.6	38	70.4
1969	105	71	67.6	16	22.5	55	77.5
1970	111	76	68.5	17	22.4	59	77.6
1971	110	68	61.8	7	10.3	61	89.7
1972	134	80	59.7	16	20.0	64	80.0
1973	147	82	55.8	9	11.0	73	89.0
1974	153	99	64.7	6	6.1	93	93.9
1975	160	124	77.5	15	12.1	109	87.9
1976	169	131	77.5	10	7.6	121	92.4
TOTAL 1967-1976	1,273	844	66.3%	126	14.9%	718	85.1%

TABLE 5
PLACE OF BIRTH OF FOREIGN-BORN PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Initial License issued in Year	A No. of Physicians issued licenses	B Europe No.	B Europe % [B/A x 100]	C Near East* No.	C Near East* % [C/A x 100]	D India, Pakistan, Sri Lanka No.	D India, Pakistan, Sri Lanka % [D/A x 100]	E Far East** No.	E Far East** % [E/A x 100]	F Central/ South America & Caribbean No.	F Central/ South America & Caribbean % [F/A x 100]	G Africa No.	G Africa % [G/A x 100]	H Total No. of foreign-born Physicians No.	H Total No. of foreign-born Physicians %
1967	91	10	11.0	12	13.2	3	3.3	2	2.2	4	4.4	1	1.1	32	35.2
1968	93	10	10.8	16	17.2	2	2.2	4	4.3	7	7.5	0	0.0	39	41.9
1969	105	11	10.5	8	7.6	4	3.8	8	7.6	3	2.9	0	0.0	34	32.4
1970	111	8	7.2	7	6.3	3	2.7	12	10.8	4	3.6	1	0.9	35	31.5
1971	110	5	4.5	8	7.3	9	8.2	11	10.0	9	8.2	0	0.0	42	38.2
1972	134	9	6.7	12	9.0	11	8.2	19	14.2	2	1.5	1	0.7	54	40.3
1973	147	11	7.5	4	2.7	19	12.9	21	14.3	9	6.1	1	0.7	65	44.2
1974	153	11	7.2	5	3.7	14	9.1	18	11.8	3	2.0	3	2.0	54	35.3
1975	160	10	6.3	2	1.3	10	6.2	8	5.0	4	2.5	2	1.3	36	22.5
1976	169	10	5.9	2	1.2	6	3.5	13	7.7	5	3.0	2	1.2	38	22.5
TOTAL 1967-1976	1,273	95	7.5%	76	6.0%	81	6.4%	116	9.1%	50	3.9%	11	0.8%	429	33.7%

*Includes Egypt, Iran, Israel, Lebanon, Syria, Turkey
**Includes Burma, China, Indochina, Japan, Korea, Malaysia, Philippines, Taiwan

Rhode Islanders gained admission per 100,000 state population. In 1971 the rate was 3.2; in 1972, 4.0; in 1973, 4.1; in 1974, 4.1; in 1975, 4.5; and in 1976, 5.6. If place of birth continues in the future to be a factor in determining place of practice, then we may anticipate more Rhode Islanders seeking licensure here when the current cadres of medical students graduate and complete residency training within the next decade. For example, 53 Rhode Islanders (30 of whom came to Brown University) were admitted to US medical schools in September of 1976.

The places of birth of those 429 foreign-born physicians who were issued MD licenses by the state of Rhode Island during the years 1967-1976 are summarized in Table 5.

Of the total of 1,273 new licensees, those born in the Far East constituted 9.1 per cent; those born in Europe, 7.5 per cent; those born in India, Pakistan, and Sri Lanka, 6.4 per cent; those born in the Near East, 6.0 per cent; those born in Central America, South America, and the Caribbean, 3.9 per cent; and those born in Africa, 0.8 per cent. Of the 429 new licensees who were foreign-born, those born in the Far East comprised 27.0 per cent of that total; those born in Europe, 22.1 per cent; those from India, Pakistan, and Sri Lanka, 18.9 per cent; those from the Near East, 17.7 per cent; those from Central America, South America, and the Caribbean, 11.7 per cent; and those from Africa, 2.6 per cent.

In reviewing the data incorporated in Table 5 one notes a decline in the percentage of foreign-born new licensees who were born in the Near East. In 1968 this group constituted 41.0 per cent (16 of 39) of the new licensees who were foreign-born, and 17.2 per cent of all new licensees; in 1976 this group constituted only 5.3 per cent (2 of 38) of foreign-born new licensees and 1.2 per cent of all new licensees.

The data in Table 5 show further that, during the decade under survey, the numbers of new licensees from Asia (subdivided in this table into Column D: India/Pakistan/Sri Lanka and Column E: the Far East) rose substantially. In the year 1973, this group constituted 61.5 per cent (40 of 65) of the new licensees who were foreign-born, and 27.2 per cent of all new licensees in this state. In 1976 this group still constituted a substantial fraction (50.0 per cent) of foreign-

(Continued on next page)

TABLE 6

PLACE OF MEDICAL EDUCATION OF PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY STATE OF RHODE ISLAND, 1967-1976

Initial Licenses Issued in Year	A No. of Physicians Issued Licenses	B U.S. and Canadian-educated Physicians No.	B % [B/A x 100]	C Foreign-educated physicians No.	C % [C/A x 100]
1967	91)	57)	62.6)	34)	37.4)
1968	93)	50)	53.8)	43)	46.2)
1969	105 =400	71 =252	67.6 =63.00	34 =148	32.4 =37.0
1970	111)	74)	66.7)	37)	33.3)
1971	110)	62)	56.4)	48)	43.6)
1972	134 =391	74 =214	55.2 =54.7	60 =177	44.8 =45.3
1973	147)	78)	53.1)	69)	46.9)
1974	153)	97)	63.4)	56)	36.6)
1975	160 =482	126 =352	78.7 =73.0	34 =130	21.3 =27.0
1976	169)	129)	76.3)	40)	23.7)
TOTAL 1967-1976	1,273	818	64.3%	455	35.7%

born new licensees, but only 11.2 per cent of all new licensees, because of the decline in the actual number of those who were foreign-born.

Tables 6 through 11 summarize the place of medical education of physicians who were issued MD licenses by the state of Rhode Island during the years 1967-1976.

Table 6 divides the population of 1,273 new MD licensees into those who were educated in the US and Canada (Column B) and those who were foreign-educated (Column C). US and Canadian-educated physicians constituted 63.0 per cent of the total number of physicians issued licenses in 1967-1970. This percentage dropped to 54.7 per cent in 1971-1973 and has risen to 73.0 per cent in the years 1974-1976.

Tables 7 and 8 indicate the regional location of the US and Canadian medical schools attended by those physicians who were issued MD licenses by the state of Rhode Island, while Table 9 lists the numbers of graduates from the US and Canadian medical schools.

As indicated by Tables 7 and 8, the greatest numbers of new MD licensees during 1967-1976 were educated in medical schools located in the Middle Atlantic region; this group constituted 25.8 per cent of all new

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TABLE 8

SUMMARY TABLE, LOCATION OF U.S. AND CANADIAN MEDICAL SCHOOLS (BY REGION) ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Region of U.S. or Canada	1967-70 No.[1]	1967-70 %	1971-73 No.	1971-73 %	1974-76 No.	1974-76 %	TOTAL 1967-76 No.	TOTAL 1967-76 %
Rhode Island	0	0.0	0	0.0	13	2.7	13	1.0
Other New England	75	18.7	47	12.0	79	16.4	201	15.8
Middle Atlantic	92	23.0	88	22.5	148	30.7	328	25.8
Midwest	41	10.2	48	12.3	64	13.3	153	12.0
South	14	3.5	17	4.3	23	4.8	54	4.2
Southwest/Rocky Mt.	6	1.5	6	1.5	12	2.5	24	1.9
Pacific	10	2.5	3	0.8	8	1.7	21	1.6
Canada	14	3.5	..5	1.3	5	1.0	24	1.9
Total U.S. and Canadian-educated physicians	252	63.0%	214	54.7%	352	73.0%	818	64.3%
Total foreign-educated physicians	148	37.0%	177	45.3%	130	27.0%	455	35.7%
TOTAL	400	100.0%	391	100.0%	482	100.0%	1,273	100.0%

[1]In this and succeeding columns, "No." refers to the numbers of physicians attending medical schools in the designated region.

TABLE 9

LOCATION OF U.S. AND CANADIAN MEDICAL SCHOOLS (BY REGION) ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Region of U.S. or Canada	1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		Total 1967-76	
	No.[1]	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Rhode Island	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1.2	11	6.5	13	1.0
Other New Eng.[2]	17	18.7	11	11.8	27	25.7	20	18.0	14	12.7	12	9.0	21	14.3	22	14.4	27	16.8	30	17.7	201	15.8
Middle Atlantic[3]	20	22.0	21	22.6	22	21.0	29	26.1	25	22.7	29	21.6	34	23.1	43	28.1	50	31.2	55	32.5	328	25.8
Midwest[4]	8	8.8	13	14.0	10	9.5	10	9.0	12	10.9	21	15.7	15	10.2	20	13.1	23	14.4	21	12.4	153	12.0
South[5]	5	5.5	2	2.2	4	3.8	3	2.7	7	6.4	6	4.5	4	2.7	8	5.2	11	6.9	4	2.4	54	4.2
Southwest and Rocky Mountain[6]	1	1.1	1	1.1	1	1.0	3	2.7	1	0.9	3	2.2	2	1.4	3	2.0	8	5.0	1	0.6	24	1.9
Pacific[7]	3	3.3	—	—	2	1.9	5	4.5	1	0.9	2	1.5	—	—	—	—	2	1.2	6	3.6	21	1.6
Canada	3	3.3	2	2.2	5	4.8	4	3.6	2	1.8	1	0.7	2	1.4	1	0.7	3	1.9	1	0.6	24	1.9
Total U.S. and Canadian-educated physicians	57	62.6%	50	53.8%	71	67.6%	74	66.7%	62	56.4%	74	55.2%	78	53.1%	97	63.4%	126	78.7%	129	76.3%	818	64.3%
Total Foreign-educated physicians	34	34.7%	43	46.2%	34	32.4%	37	33.3%	48	43.6%	60	44.8%	69	46.9%	56	36.6%	34	21.3%	40	23.7%	455	35.7%
TOTAL	91	100.0%	93	100.0%	105	100.0%	111	100.0%	110	100.0%	134	100.0%	147	100.0%	153	100.0%	160	100.0%	169	100.0%	1,273	100.0%

[1]In this and succeeding columns, "No." refers to the number of Physicians attending medical schools in the designated region.
[2]Other New England: Connecticut, Massachusetts, New Hampshire, Vermont.
[3]Middle Atlantic: District of Columbia, Maryland, New Jersey, New York, Pennsylvania
[4]Midwest: Illinois, Iowa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Kansas, South Dakota, Wisconsin.
[5]South: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, West Virginia.
[6]Southwest and Rocky Mountain: Arizona, Colorado, New Mexico, Nevada, Oklahoma, Texas, Utah.
[7]Pacific: California, Hawaii, Oregon, Washington.

TABLE 10

LOCATION OF FOREIGN MEDICAL SCHOOLS (BY REGION) ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-76

Foreign Region	1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		Total 1967-76	
	No.[1]	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Europe	13	14.3	15	16.1	12	11.4	14	12.6	11	10.0	16	11.9	12	8.2	16	10.5	12	7.5	14	8.3	135	10.6
Near East[2]	10	11.0	15	16.1	7	6.7	4	3.6	7	6.4	11	8.2	4	2.7	5	3.3	1	0.6	1	0.6	65	5.1
India, Pakistan, Sri Lanka	3	3.3	2	2.2	4	3.8	3	2.7	9	8.2	12	9.0	20	13.6	15	9.8	11	6.9	7	4.1	86	6.8
Far East[3]	2	2.2	4	4.3	8	7.6	10	9.0	11	10.0	19	14.2	22	15.0	17	11.1	5	3.1	11	6.5	109	8.6
Central America, South America, Caribbean	5	5.5	7	7.5	3	2.9	5	4.5	10	9.1	2	1.5	11	7.5	3	2.0	4	2.5	5	3.0	55	4.3
Africa	1	1.1	0	0.0	0	0.0	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	2	1.2	5	0.4
Total Foreign-educated physicians	34	37.4%	43	46.2%	34	32.4%	37	33.3%	48	43.6%	60	44.8%	69	46.9%	56	36.6%	34	21.3%	40	23.7%	455	35.7%
Total U.S. and Canadian-educated physicians	57	62.6%	50	53.8%	71	67.6%	74	66.7%	62	56.4%	74	55.2%	78	53.1%	97	63.4%	126	78.7%	129	76.3%	818	64.3%
TOTAL M.D. Licenses Issued 1967-76	91	100.0%	93	100.0%	105	100.0%	111	100.0%	110	100.0%	134	100.0%	147	100.0%	153	100.0%	160	100.0%	169	100.0%	1,273	100.0%

[1]In this and succeeding columns, "No." refers to the number of **physicians** who attended foreign medical schools in the designated region.
[2]Includes Egypt, Iran, Israel, Lebanon, Syria, Turkey.
[3]Includes Burma, China, Indochina, Japan, Korea, Malaysia, Philippines, Taiwan.

TABLE 9

U.S. AND CANADIAN MEDICAL SCHOOLS ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Medical School	1967-1970	1971-1973	1974-1976	School Total 1967-1976	Regional Total 1967-1976
Rhode Island					
Brown	—	—	13	13	13
Other New England					
Boston University	9	12	16	37	
Connecticut	—	—	—	—	
Dartmouth	—	—	1	1	
Harvard	13	5	17	35	
Massachusetts	—	—	—	—	
Tufts	35	23	29	87	
Vermont	8	5	10	23	
Yale	10	2	6	18	
	75	47	79	201	201
Middle Atlantic					
Albany	8	5	8	21	
Albert Einstein	2	—	6	8	
Columbia	7	4	8	19	
Cornell	4	3	9	16	
Georgetown	4	8	13	25	
Geo. Washington	8	4	2	14	
Hahnemann	5	4	7	16	
Howard	2	1	2	5	
Jefferson	4	7	6	17	
Johns Hopkins	1	3	4	8	
Maryland	3	3	3	9	
Mt. Sinai	—	—	2	2	
New Jersey/ Seton Hall	7	3	3	13	
N.Y. Medical College	13	4	8	25	
N.Y. University	5	3	7	15	
New York:					
SUNY Buffalo	2	—	2	4	
SUNY Downstate/ Long Island College of Medicine	5	13	33	51	
SUNY Stony Brook	—	—	1	1	
SUNY Upstate	—	2	—	2	
Pennsylvania, Medical College of/ Women's College of Pennsylvania	1	1	2	4	
Penn. State	—	1	2	3	
Pennsylvania, U.	4	5	8	17	
Pittsburgh	2	3	5	10	
Rochester	4	4	3	11	
Temple	1	7	4	12	
	92	88	148	328	328
Midwest					
Case Western Reserve	1	2	2	5	
Chicago Medical	3	—	6	9	
Chicago-Pritzker	3	4	3	10	
Cincinnati	—	4	8	12	
Creighton	1	1	2	4	
Illinois	1	5	2	8	
Indiana	2	2	—	4	
Iowa	1	—	2	3	
Kansas	1	—	1	2	
Loyola Stritch	1	4	1	6	
Michigan State	—	—	2	2	
Michigan, University of	2	1	3	6	
Minnesota	—	3	6	9	
Missouri	2	—	—	2	
Nebraska	1	—	—	1	
Northwestern	4	2	2	8	
Ohio, Medical College of	—	—	—	—	
Ohio State	3	3	3	9	
Rush	—	—	1	1	
Saint Louis	5	8	8	21	
Washington U. (St. Louis)	—	1	3	4	
Wayne State	4	4	3	11	
Wisconsin, Medical College of/ Marquette	6	3	3	12	
Wisconsin, University of	—	1	3	4	
	41	48	64	153	153
South					
Alabama	—	—	1	1	
Arkansas	—	1	—	1	
Bowman Gray	—	2	—	2	
Duke	2	1	3	6	
Emory	—	—	—	—	
Florida	—	—	—	—	
Georgia	1	—	—	1	
Kentucky	—	1	—	1	
Louisiana State	—	1	—	1	
Louisville	—	1	—	1	
Meharry	—	1	—	1	
Miami	4	3	2	9	
Mississippi	—	—	1	1	
North Carolina	1	—	3	4	
Puerto Rico	—	—	1	1	
South Carolina	—	1	1	2	
Tennessee	—	—	1	1	
Tulane	—	—	4	4	
Vanderbilt	—	—	—	—	
Virginia, Medical College of	3	3	3	9	
West Virginia	1	1	—	2	
	14	17	23	54	54

TABLE 9—Continued

U.S. AND CANADIAN MEDICAL SCHOOLS ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Medical School	1967-1970	1971-1973	1974-1976	School Total 1967-1976	Regional Total 1967-1976
Southwest and Rocky Mountain					
Arizona	—	—	—	—	
Baylor	1	1	3	5	
Colorado	—	—	3	3	
Nevada	—	—	—	—	
New Mexico	—	—	—	—	
Oklahoma	—	1	1	2	
Texas	3	4	5	12	
Texas Tech	—	—	—	—	
Utah	2	—	—	2	
	6	6	12	24	24
Pacific					
California	3	1	3	7	
Hawaii	—	—	—	—	
Loma Linda	1	—	—	1	
Oregon	—	1	—	1	
Southern Calif.	—	—	—	—	
Stanford	—	1	1	2	
Washington, University of	6	—	4	10	
	10	3	8	21	21
Canada					
Alberta	2	—	—	2	
British Columbia	1	—	1	2	
Calgary	—	—	—	—	
Dalhousie	1	1	—	2	
Laval	—	1	—	1	
Manitoba	—	—	2	2	
McGill	8	1	1	10	
McMaster	—	—	—	—	
Memorial of Newfoundland	—	—	—	—	
Montreal	—	—	—	—	
Ottawa	—	—	—	—	
Queens	—	—	—	—	
Saskatchewan	1	—	—	1	
Sherbrooke	—	—	—	—	
Toronto	—	1	—	1	
Western Ontario	1	1	1	3	
	14	5	5	24	24
All Regions					818

licensees and 40.1 per cent (328 of 818) of new licensees who were educated in the US and Canada. Physicians educated in New England states other than Rhode Island constituted 15.8 per cent of all new licensees; those educated in the Midwest, 12.0 per cent; those educated in the South, 4.2 per cent; those educated in the Southwest and Rocky Mountain states, 1.9 per cent; those educated in Canada, 1.9 per cent; and those educated in the Pacific states, 1.6 per cent.

The first physicians educated in Rhode Island were graduated in 1975; in that year two obtained MD licenses in this state. During 1976 Rhode Island-educated physicians comprised 6.5 per cent of all new licensees in this state, and 8.5 per cent (11 of 129) of those educated in the US and Canada.

The data incorporated in Table 9 show that graduates of 93 medical schools in the US and Canada have obtained licensure in Rhode Island during 1967-1976. Of these, 87 graduates came from Tufts University; 51 from the State University of New York, Downstate Medical Center College of Medicine; 37 from Boston University; and 35 from Harvard University.

Tables 10 and 11 present the regional location of the foreign medical schools attended by those physicians licensed by the state of Rhode Island during 1967-1976. Of these, Europe provided the largest number of graduates, comprising 10.6 per cent of all new licensees and 29.7 per cent (135 of 455) of those who were foreign-educated. Graduates from the Far East constituted 8.6 per cent of new licensees; those from India, Pakistan, and Sri Lanka, 6.8 per cent; those from the Near East, 5.1 per cent; those from Central America, South America, and the Caribbean, 4.3 per cent; and those from Africa, 0.4 per cent.

One trend indicated by the data in these tables is the rise in the number of new licensees who received their medical education in Asian universities. These physicians, who in 1967-1970 comprised 9.0 per cent of all new licensees in Rhode Island and 24.3 per cent (36 of 148) of the foreign-educated new licensees, increased in number by 1971-1973

(Continued on page 267)



TABLE 11
SUMMARY TABLE, LOCATION OF FOREIGN MEDICAL SCHOOLS (BY REGION) ATTENDED BY PHYSICIANS WHO WERE ISSUED M.D. LICENSES BY THE STATE OF RHODE ISLAND, 1967-1976

Foreign Region	1967-70 No.[1]	1967-70 %	1971-73 No.	1971-73 %	1974-76 No.	1974-76 %	TOTAL 1967-76 No.	TOTAL 1967-76 %
Europe	54	13.5	39	10.0	42	8.7	135	10.6
Near East	36	9.0	22	5.6	7	1.5	65	5.1
India, Pakistan, Sri Lanka	12	3.0	41	10.5	33	6.8	86	6.8
Far East	24	6.0	52	13.3	33	6.8	109	8.6
Central America, South America, Caribbean	20	5.0	23	5.9	12	2.5	55	4.3
Africa	2	0.5	0	0.0	3	0.6	5	0.4
Total Foreign	148	37.0%	177	45.3%	130	27.0%	455	35.7%
All U.S./Canadian	252	63.0%	214	54.7%	352	73.0%	818	64.3%
TOTAL	400	100.0%	391	100.0%	482	100.0%	1,273	100.0%

[1]In this and succeeding columns, "No." refers to the number of **physicians** who attended foreign medical schools in the designated region.

to 23.8 per cent of all new licensees and 52.5 per cent (93 of 177) of those who were foreign-educated. In 1974-1976 the percentage of this group among all new licensees had dropped to 13.6 per cent, although it still comprised 50.8 per cent of foreign-educated new licensees.

During the decade under survey the numbers of those physicians educated in the Near East decreased from 1967-1970 (when they constituted 9.0 per cent of all new licensees and 24.3 per cent of those who were foreign-educated) to 1974-1976 (when they comprised 1.5 per cent of all new licensees and 5.4 per cent of those who were foreign-educated).

SUMMARY

We have prepared statistical summaries describing the average age, place of birth, and place of education of the 1,273 physicians who were issued M.D. licenses by the state of Rhode Island during the decade 1967 to 1976. It is hoped that these tabulations will form the base for a continuing scrutiny of the characteristics of physicians seeking professional licensure in this state.

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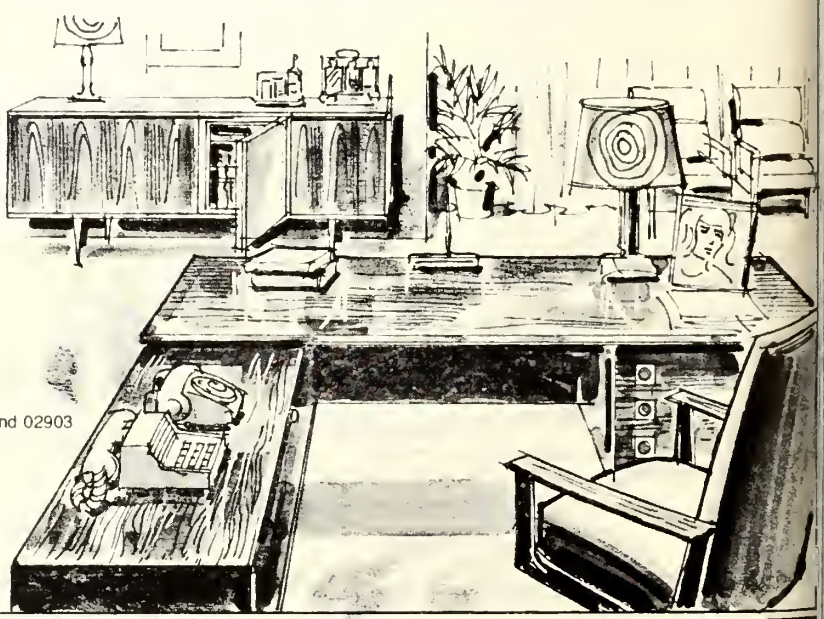
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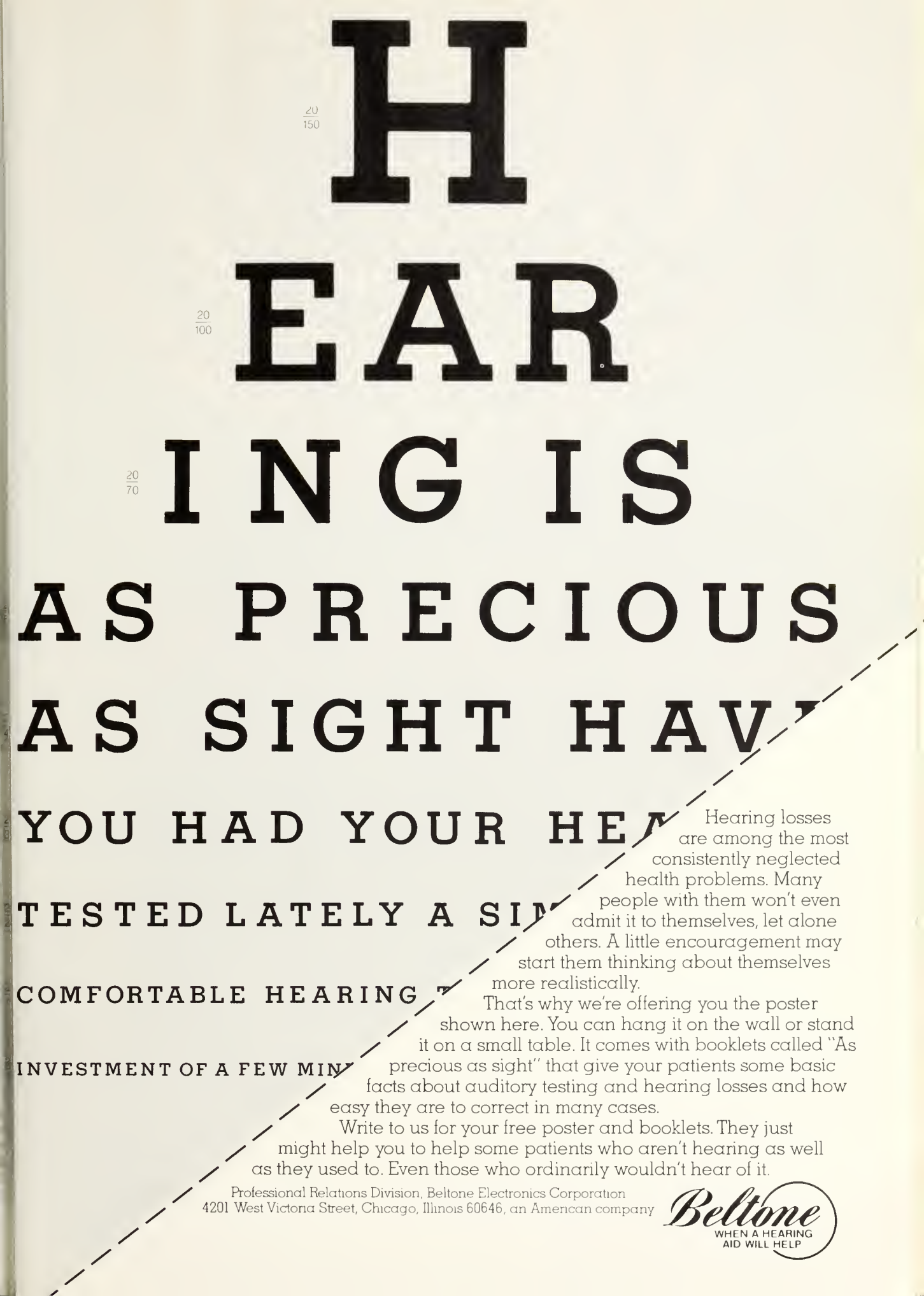


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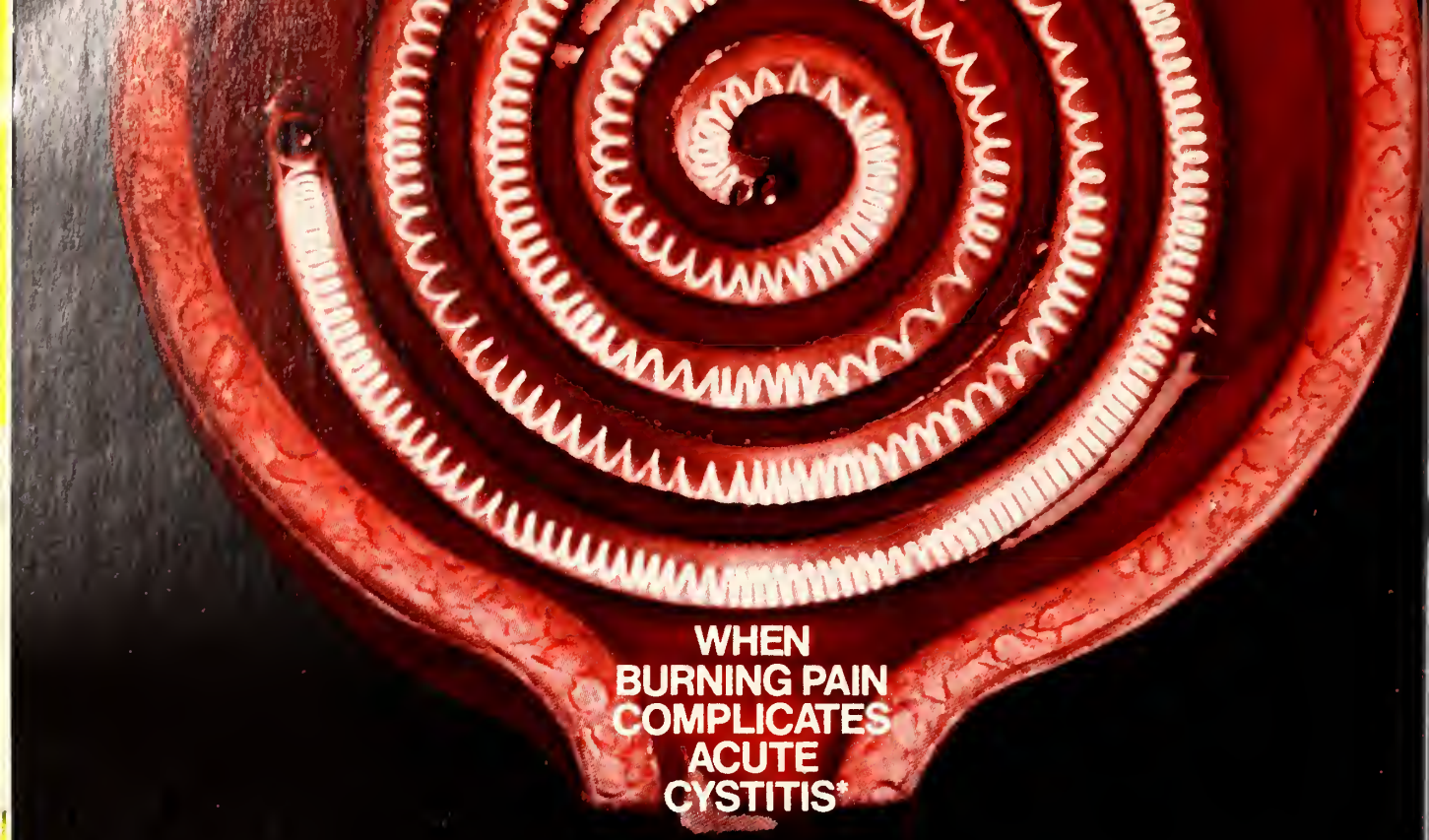
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*nonobstructed; due to susceptible organisms

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Indications: In adults, urinary tract infections complicated by pain (primarily pyelonephritis, pyelitis and cystitis) due to susceptible organisms (usually *E. coli, Klebsiella-Aerobacter, Staphylococcus aureus, Proteus mirabilis,* and, less frequently, *Proteus vulgaris)* in the absence of obstructive uropathy or foreign bodies.

Note: Carefully coordinate *in vitro* sulfonamide sensitivity tests with bacteriologic and clinical response; add aminobenzoic acid to follow-up culture media. The increasing frequency of resistant organisms limits the usefulness of antibacterials including sulfonamides. Measure sulfonamide blood levels as variations may occur; 20 mg/100 ml should be maximum total level.

Contraindications: Children below age 12; sulfonamide hypersensitivity; pregnancy at term and during nursing period; because Azo Gantanol contains phenazopyridine hydrochloride it is contraindicated in glomerulonephritis, severe hepatitis, uremia, and pyelonephritis of pregnancy with G.I. disturbances.

Warnings: Safety during pregnancy not established. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been reported and early clinical signs (sore throat, fever, pallor, purpura or jaundice) may indicate serious blood disorders. Frequent CBC and urinalysis with microscopic examination are recommended during sulfonamide therapy.

Precautions: Use cautiously in patients with impaired renal or hepatic function, severe allergy, bronchial asthma; in glucose-6-phosphate dehydrogenase-deficient individuals in whom dose-related hemolysis may occur. Maintain adequate fluid intake to prevent crystalluria and stone formation.

Adverse Reactions: *Blood dyscrasias* (agranulocytosis, aplastic anemia, thrombocytopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia); *allergic reactions* (erythema multiforme, skin eruptions, Stevens-Johnson syndrome, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis); *G. I. reactions* (nausea, emesis, abdominal pains, hepatitis, diarrhea, anorexia, pancreatitis and stomatitis); *CNS reactions* (headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo and insomnia); *miscellaneous reactions* (drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L. E. phenomenon). Due to certain chemical similarities with some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia. Cross-sensitivity with these agents may exist.

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rnings: Do not use potassium supplements, tary or otherwise, unless hypokalemia de-ops or dietary intake of potassium is markedly paired. If supplementary potassium is needed, assium tablets should not be used. Hyper-lemia can occur, and has been associated with cardiac irregularities. It is more likely in severely ill patients with urine volume less than one liter/day, the elderly or diabetics, with suspected or confirmed renal insufficiency. Periodic determinations of serum K^+ should be made. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **The presence of a widened QRS complex or arrhythmia in association with hyperkalemia requires prompt additional therapy.** Thiazides are reported to cross the placental barrier and appear in breast milk; fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and other adverse reactions that have occurred in the adult may result. When used in pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics, or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium® (triamterene, SK&F Co.), and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Do periodic blood studies in cirrhotics to check for nondrug-related variations in blood pictures, and in patients with folic acid depletion, since 'Dyrenium' may contribute to appearance of megaloblastosis. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

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Editorials

CLASS OF 1977

For the third successive year we welcome as contributors to the columns of the **Journal** the graduating class of the Brown University Medical School. The present event takes place exactly 150 years after the first venture in medical education at Brown foundered in 1827. With a graduating class of 60 highly talented individuals, and national recognition as a school of quality, the medical school can truly be said to have come of age.

The graduates' papers in this issue, coming as they do from a male and a female member of the class, are a token of the growing role and influence of women in medicine.

We particularly treasure the gracious and graceful words of appreciation expressed by Steven N. Emancipator in his paper "On Growing Up." We in turn welcome him and his colleague classmates to the community of medicine and wish them every success and happiness in the pursuit of their careers.

We urge all of them to become interested in and involved in organized medicine. The AMA is the only organization that represents all doctors. Its primary goal is excellence of medical care, and it seeks to preserve the independence and dignity of the medical profession. There are now over 10,000 housestaff members in the AMA.

Those who remain in Rhode Island are urged to join the Rhode Island Medical Society as well. Rhode Island is one of a number of states that provide for society membership of residents in training. Thus those who join will have the opportunity to meet with their senior colleagues, and they in turn will receive the benefit of youthful counsel.

We look forward to having them among us, and again welcome.!



IMPACT OF THE BROWN MEDICAL PROGRAM ON RHODE ISLAND

The state of Rhode Island appropriates a substantial sum of money each year to support the operating budget of the Brown University Medical Program. This is a sensitive political issue, as the continuation of this support is contingent upon its contribution to the education of Rhode Island young people in medicine and the settling of a significant number of graduates in the state. The paper by Ramos et al published in this issue of the **Journal** indicates that the Brown program is making a contribution on both accounts.

For example, of 53 Rhode Islanders admitted to United States medical schools in September of 1976, thirty (one half of the class) were admitted to Brown University. Other classes at the medical school, of course, contribute many more.

The first physicians educated in Rhode Island were graduated in 1975. In that year two obtained M.D. licenses in this state. During 1976 6.5 per cent of all new licensees in Rhode Island and 8.5 per cent (11 of 129) of Rhode Island licensees in the U.S. and Canada were Rhode Island-educated (i.e. Brown-educated). Projections would appear to indicate that these proportions will indeed increase.

This paper indicates, as have several other summaries emanating from the Brown University Medical Program and published in the **Journal,** that Brown University is indeed contributing increasingly in both respects.

ANCILLARY SERVICES

There is much concern about the costs of new technologies in medicine, particularly in relation to cost effectiveness and available financial resources. We have been confronted with this dilemma in a striking way with the recent advent of computerized axial tomography (CAT). With equipment costing in excess of $500,000 and individual tests costing upwards of $200, the expense of equipping and operating a unit is of major importance. A recent estimate of the potential costs of colonoscopy provides a further example. According to Abrams[1] a reliable estimate indicates that there are currently 3,000 fiberoptic colonoscopes in the United States. The cost of equipping a colonoscopy unit may reach $25,000, bringing the total expenditure to possibly $75 million. The average life of an instrument before servicing is some 200 examinations. The repairs approximate one third of the original cost, or a total investment of $10,000, which is $50 per examination.

It is considered desirable that endoscopists perform a minimum of 200 diagnostic procedures before attempting colonoscopic polypectomy. The cost of the necessary 600,000 diagnostic colonoscopies at $400 each (it could be something less in Rhode Island) would be $240 million.

It has recently been recommended that all patients scheduled for colectomy for colorectal cancer have total colonoscopy to detect a synchronous malignant tumor prior to surgery. For the approximately 100,000 new colorectal cancers that occur in one year, the endoscopy expenses alone would come to $40 million.

Is it economically feasible for everyone to have ideal care?

REFERENCE

[1]Abrams, JS: A hard look at colonoscopy. Am J Surg 133:111, Jan 77



LIFESTYLE AND MORTALITY

The Rhode Island Department of Health recently issued a newsletter on "Rhode Island Selected Health Indices: Urban Area Neighborhoods 1975." In the past we have discussed similar reports, pointing out the detrimental influences of inner city life. The present report again emphasizes this discrepancy. In the year 1975 the overall death rate for the Inner City of Providence was 13.5 per 100,000 population, as compared to 11.2 for the rest of the city, 9.6 for all of Rhode Island, and 9.0 for the United States as a whole.

Certain breakdowns are revealing in other respects. It is generally conceded that tobacco, alcohol, and obesity contribute substantially to the overall morbidity and mortality among the population. Lung cancer, diabetes, myocardial infarction, emphysema, cirrhosis of the liver, and accidents collectively accounted for 2,735 of the total of 8,866 deaths in Rhode Island in 1975. Cigarette smoking contributes substantially to the incidence of lung cancer, myocardial infarction, and emphysema. Alcohol is certainly a primary cause of cirrhosis, and contributes to the incidence of diabetes and accidents (50 per cent of all fatal automobile accidents are alcohol related). And finally, the affinity between obesity and diabetes is clearly recognized.

Some of the etiological relationships, such as that between tobacco and lung cancer or alcohol and cirrhosis, approach 100 per cent. Others, such as that between tobacco and

(Continued on page 282)

Editor's Mailbox

POLLYANNA AND CASSANDRA VERSUS SCYLLA AND CHARYBDIS

To the Editor:

The "to-do" over the lack of availability of Professional Liability Insurance (loosely called Malpractice Insurance) and the resulting compromise to the benefit of the group (society) stirs my concern about a re-allocation of the line between the needs and rights of the individual and the needs and rights of the group. No matter how the "malpractice crisis" is handled, one must be alert to the consequences to the rights of the individual, a physician and a patient, as contrasted with physicians in general and patients in general.

"The true danger to liberty is when it is nibbled away for expedients, and by parts." (Edmund Burke — England, about 1775)

"Eternal vigilance is the price of freedom." (Tom Paine — Boston, 1775)

Lenin said (among other things) that when the State can come between the patient and physician in the consulting room, the road is wide open to socialism. Socialism to him meant that a person was to be completely dependent on the State and could turn to (and trust) no one else. "State" in the USA stands for any organization claiming to speak for the majority, be it a government agency, a collection of doctors, an insurance company, a group of legislators or a group of lawyers. There is no room for individual differences and needs except as projected by the "State." All must be logical, uniform, capable of re-

(Continued on next page)

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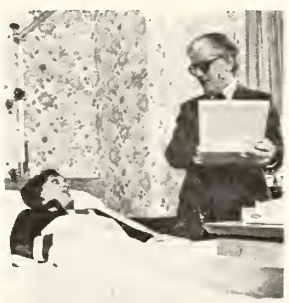
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duplication, consistent, "in line" and computerizable, even art.

While I was at a medical meeting some time back, listening to medical and legal politicians discuss the "Malpractice Crisis," all fine men, meaning well and trying to avoid blaming and fault-finding, I wondered if Justice Brandeis would repeat himself: "Experience should teach us to be most on our guard to protect liberty when the government's purposes are beneficent. Men born to freedom are naturally alert to repel invasion of their liberty by evil-minded rulers. The greatest dangers to liberty lurk in insidious encroachment by men of zeal, well-meaning but without understanding." (Olmsteam vs. U.S., 277US438, 1928) Psychiatrically phrased, this means that it is easier to recognize overt aggression than covert (unconscious) aggression.

In being right and in doing the right thing, let us be aware and vigilant about the insidious nibbling away of the individual rights of a physician and a patient, part of the art of medicine. It may be that the tort system does not protect liberty in an area where art (chance?) is a large component.

Joseph M. Zucker, M.D.

⚓ ⚓ ⚓

ONE SENTENCE ESSAY

If all American citizens were afforded the benefits available from current American technology, the cost in one year would exceed the Gross National Product.

. . . H. Mahler, World Health Organization

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Item from CLINILOGICS, Issue 1, 1974, reprinted by permission of Calbiochem, San Diego



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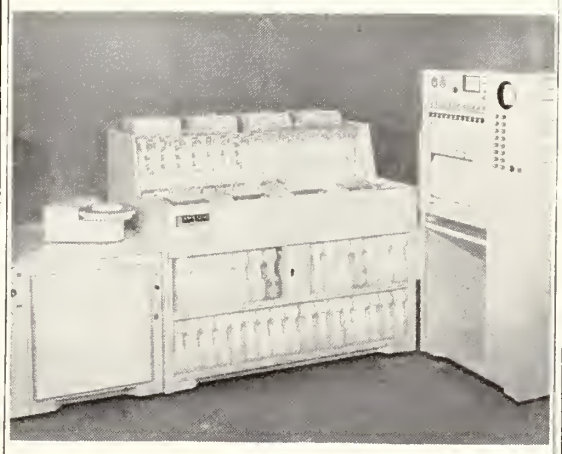
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Book Review

CLINICAL METHODS: THE HISTORY, PHYSICAL, AND LABORATORY EXAMINATIONS, 2 Vols., edited by H. Kenneth Walker, W. Dallas Hall, J. Willis Hurst. Boston, Butterworths, 1976. $24.50

"Do not judge a book by its cover." However, in this day of sophisticated design and technology the two uneven volumes, I and II, of this set, bound together by poor plastic loose leaf rings, does offend and cannot help but detract from this Butterworth publication by the faculty in medicine of the Emory University School of Medicine in Atlanta, Georgia. The two volumes are essentially an intern and resident handbook, the type with which this reviewer became familiar in the 1940s at the University of Pennsylvania and which many faculties have produced. The novelty of this latest effort is the preoccupation with an attempt at uniformity and standardization. A debt is paid to Weed and his problem oriented medical record and the new Defined Data Base, which is what the older generation calls the "workup." There are two hundred forty-six subjects, each written by a different member of the Emory faculty, all handled in an identical manner: (1) Definition; (2) Technique; (3) Background Information; (4) Clinical Significance; and (5) Selective References. Uniformity extends further by limiting the presentation to at most one or two paragraphs under each sub-heading. Brevity is the sole of wit, and one can argue that salient points can be presented very clearly and precisely if one keeps his mind on brevity. But the most simple philosophical reflection would convince one that what needs to be said under each of the chapter headings must at times be constrained by the limits of space. Material may be compressed, or conversely some subjects may be unnecessarily expanded to the uniform dimension.

There is no royal road to learning; there certainly is no real ideal presentation of teaching material in medicine. In this day of specialization it is inconceivable for an Osler to write a textbook of medicine. The popular-

(Continued on next page)

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ity of Harrison's "Principles of Internal Medicine" was due to the recognition of the need for plural authorship. However, as in all things there is bound to be an unevenness in viewpoint and presentation in such productions, which has been overcome to some extent by the strict adherence to the presentation of all material in the standardized form of definition, technique, background, clinical significance, and selected references.

As a handbook for first year residents the books appear to be headed for success. Because of briefness and standard presentations it can be used as a starting text and a reference work for the medical student or first year resident. However, nature rigs everything, and what may be gained by one method of instruction may be offset by a loss in some other way. To test the books the workup of a jaundiced patient was considered by this reviewer. Chapter headings were found in two distinct places, one under "Serum Bilirubin" and the other "Jaundice." Each chapter was written by a different member of the faculty. In the general index under liver disease at least six separate references were listed. The knowledge to be gained in any of them, because of the brevity of the presentation, is most elemental.

A similar problem was apparent in referring to "The Electrocardiogram" and "The Chest X-ray." As presentations of the most elemental material, by the compression of a large corpus of knowledge into four paragraphs, the job is well done but on an elementary basis.

The problem oriented medical record has a great deal to commend it, but even the most avid advocates must admit certain disadvantages and limitations. Consistency has always been the mark of a small mind; consistency is against all rules of nature. The same holds for standardization. There is no room for sophisticated consideration of medical data and problems, which is absolutely essential in the art of medicine. There is no single path to knowledge. Oftimes the best road is winding and circuitous and may seem to wander in direction. As a first source or check for a young resident doing histories and physical examinations and reviewing laboratory data, this "Resident's Handbook" may for a while be useful for reference purposes. He may find the references of value, but his knowledge and skill as a physician will come from other sources.

This has been a commendable and concerted effort to present the material of internal medicine which must be handled by a young resident in an efficient, logical, standardized manner. The ultimate value of the book will be in the feedback of house officers as they employ it. The seasoned physician will not find it useful, because of the elementary nature of the material, all of which must be in the internist's head if he is to survive in the current medical, legal, and educational environment.

Robert V. Lewis, M.D.



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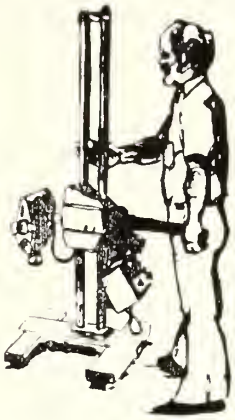
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Peripatetics

ROBERT P. DAVIS, M.D., Director of the Division of Renal and Metabolic Diseases at The Miriam Hospital, has been certified as a Diplomate of the Subspecialty Board in Nephrology of the American Board of Internal Medicine.

* * *

THOMAS FORSYTHE, M.D., of Providence, and HARVEY PHILLIPS LESSELBAUM, of Barrington, members of the American College of Radiology, became fellows of the College at its 54th annual meeting in Houston in April.

* * *

MILTON W. HAMOLSKY, physician-in chief of the Department of Medicine at Rhode Island Hospital and professor of Medical Sciences at Brown University, recently was selected by the Mallinckrodt Chemical and Nuclear Company, Inc., as one of "a select group of 12 pioneer medical scientists to typify the many who have worked so hard to build the growing discipline of nuclear medicine." Dr. Hamolsky was so honored because of his development in the 1950's of the first **in vitro** diagnostic test using radioactive isotopes for the diagnosis of thyroid diseases.

* * *

Delegates of the Rhode Island Society of Internal Medicine to the twenty-first annual meeting of the American Society of Internal medicine were HENRY IZEMAN, M.D. and DANIEL MOORE, M.D. The meeting was held in Kansas City, Missouri, March 24-27.

* * *

RAYMOND E. MOFFITT, M.D., was recently appointed Governor of the American College of Gastroenterology, New England states. His introduction to the Board of Governors takes place in Toronto in May.

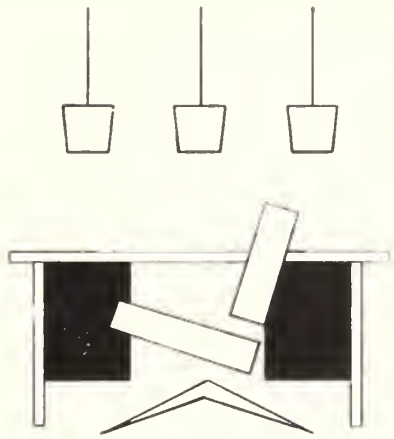
* * *

At a recent meeting of the Board of Regents of the American College of Physicians the following new fellows were among those elected: VINCENT A. DeCONTI, M.D. of North Providence; ROBERT L. CURRAN, M.D. of Pawtucket; MICHAEL J. FRIEDLAND, M.D. of Providence; and ALBERT J. LAURENZO, M.D. of Westerly.

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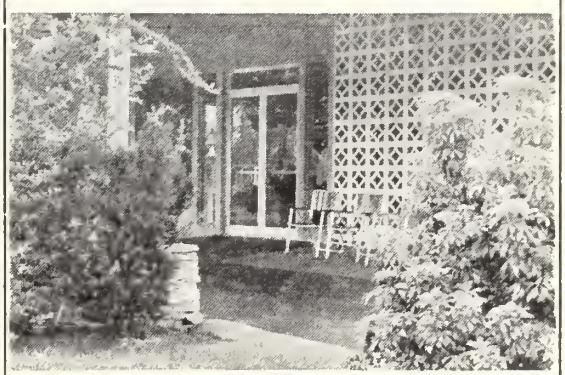
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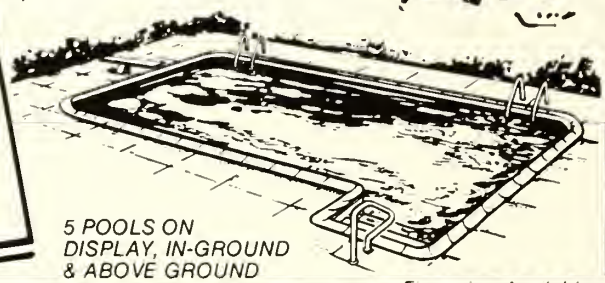
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MEDICAL BUREAU of the Providence Medical Association

PRESIDENT'S PAGE

(Continued from page 228)

ing for a hospitalized patient would create a longer hospital stay and unwarranted expense. No patient should be required to pay for a consultant's services that are not of value to him or that are not medically indicated.

I do not believe that it is the prerogative of any hospital administration to make the decision as to which licensed physicians may refer ambulatory patients to the hospital to be tested, nor which licensed physicians attending hospitalized patients may order CT scans or any other test generally available, provided the criteria for its need are met. It is certainly not the function of any third party payer to choose which physician, selected only by specialty, can determine "medical necessity." I do not believe that the Health Planners have been granted the power to artificially create two classes of physicians.

It is ironical that while some legislatures are making laws legalizing the prescribing of concoctions such as laetrile, other legislatures are restricting the use of diagnostic techniques of proved life-saving value. In the first instance, the argument is that there is probably no direct pharmacological harm from the substance and that the people should have the right to spend money as they choose, even though the material is not efficacious. In the second instance, the argument is that though the procedures are efficacious the people should be denied ready access to them solely because of their cost.



'IT WAS THE BEST OF TIMES. IT WAS THE WORST OF TIMES'

(Continued from page 245)

strength; compassion and competence are not mutually exclusive in our service to those who come asking for help. And also I think we know just how vitally important the "art of conversation" is in talking to — and really listening to — a patient.

In 1873, one hundred years before we began our formal medical education, Sigmund Freud began his — probably few, if any, of his colleagues realized at that time just how important his name and hiswork would become to the rest of the world. So looking ahead, who knows what each of us has the potential to become? We go our separate ways now, pursuing our individual definitions of personal and professional fulfillment. We'll find and fill our own niches and give the best we have. It may not be too late to run away and join the circus, but I don't think that any of us wants to now — we've been "hooked" by medicine. And even the cynics among us must seriously consider what Stephen Paget said in "Confessio Medici":

> Surely a diploma, obtained by hard examination and hard cash, and signed and sealed by an earthly examiner, cannot be a summons from heaven. **But it may be.**



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LIFESTYLE AND MORTALITY

(Continued from page 270)

myocardial infarction or emphysema are certainly very substantial.

Thus, more than one fourth of all deaths in Rhode Island are caused by diseases that have either a close relationship or absolute connection with tobacco, alcohol, and obesity.

If we make a conservative estimate that one-half of these 2,735 deaths are caused by or associated with abuse of alcohol and tobacco and the presence of obesity, it follows that one-sixth of all deaths in Rhode Island are caused by alcohol, tobacco, obesity, or combinations of them. The actual incidence is most certainly higher. Mortality statistics are but a pale reflection of the morbidity, disability, and misery associated with these conditions. The present movement to emphasize improvements in lifestyle as a way of lessening disease and its prohibitive costs is well directed.



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June, 1977

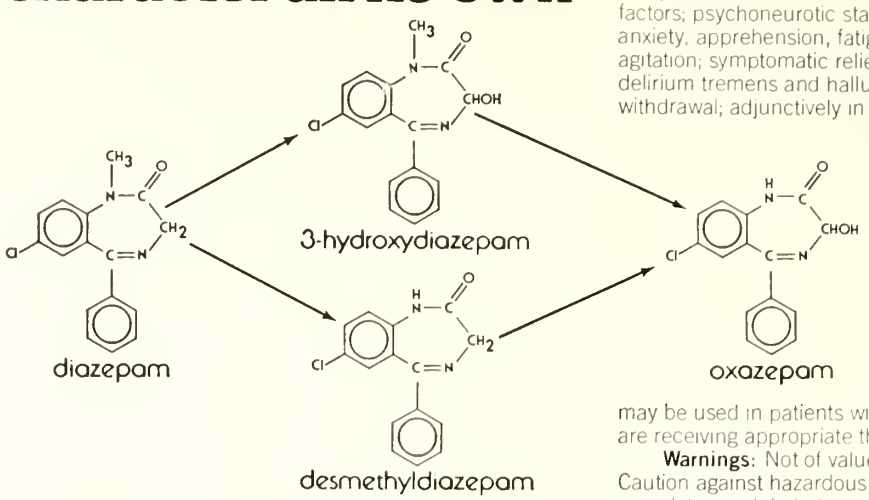
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CLINICAL PAPERS

See Newsletter

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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

Usage in Pregnancy: **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

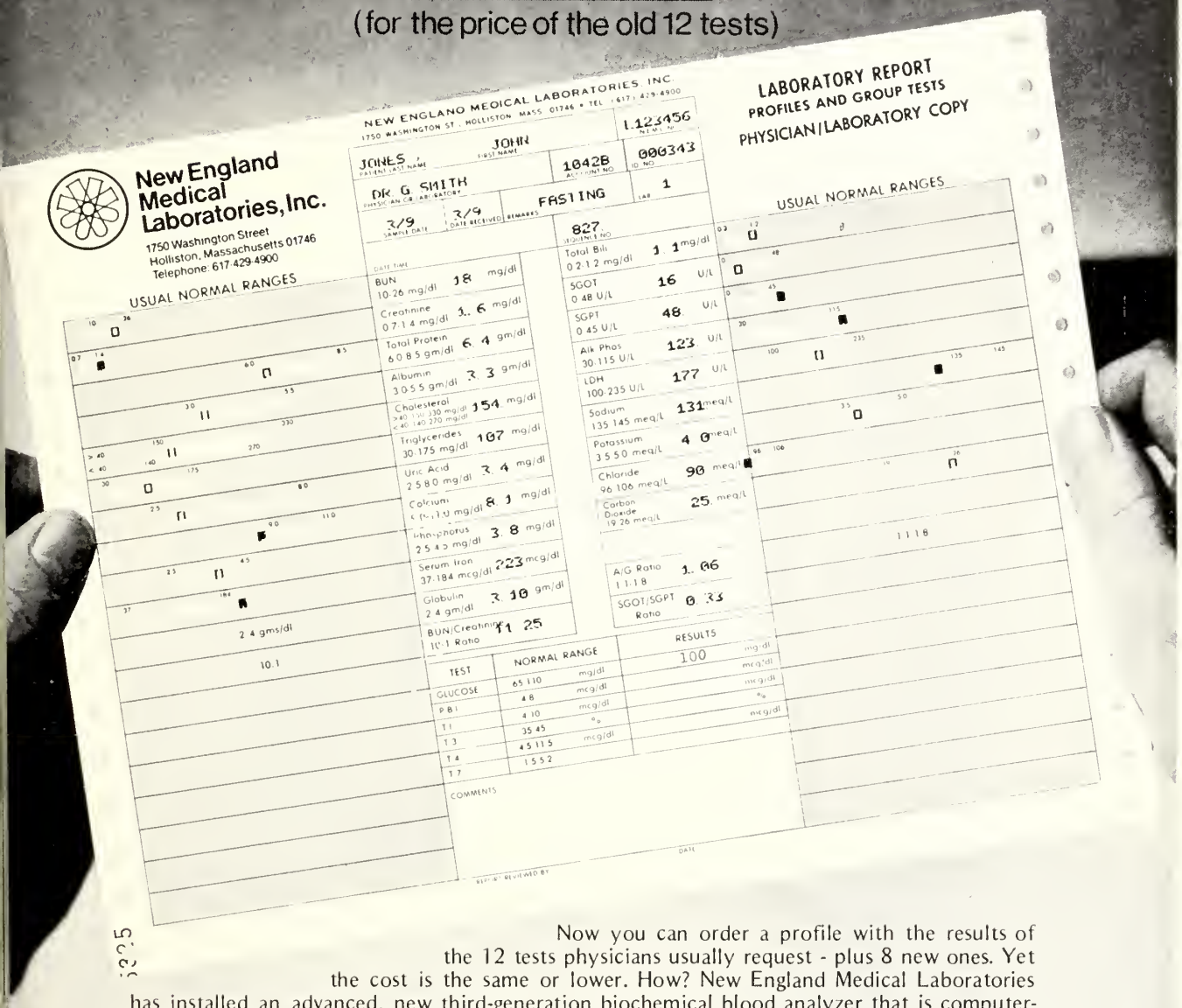
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Rhode Island Medical Journal

JUNE, 1977 VOLUME 60, No. 6

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IEWSLETTER . . . June, 1977

THE RHODE ISLAND MEDICAL SOCIETY

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rank W. Sullivan, M.D. was in-
ed at the Annual Meeting on May
is the 118th president of the Rhode
nd Medical Society. J. E. Caruolo,
)., Director of the Division of Gen-
Surgery at Roger Williams Hospi-
was named president-elect; Charles
Round, M.D., Chief of Surgery at
t County Memorial Hospital, vice
ident; Melvin D. Hoffman, a Provi-
e internist, secretary; and Melvyn
Gelch, M.D., Providence neurologi-
urgeon, was named treasurer.

octor Frank W. Sullivan practices
ral psychiatry in Cranston and is
he attending staffs of Rhode Island
pital and Butler Hospital. He holds
intments as clinical professor of
hology at the University of Rhode
d and assistant clinical professor of
hiatry in the Brown University Pro-
m in Medicine.

octor Sullivan's association with the
le Island Medical Society has been
lighted by innumerable activities
ding the following: Commissioner
ublic Health 1974-75, member of
Mediation Committee since 1971,
ber of the Ad Hoc Committee for
professional Code of Ethics 1974-76,
le Island Medical Society Repre-
tive to the Governor's Task Force
member of the Board of Directors
e medical malpractice Joint Under-
r's Association 1975-1976, delegate
e Rhode Island Medical Society
se of Delegates since 1973, and a
ber of the Executive Committee of
Providence Medical Association
1973.

is a member of the board of di-
rs of RIPSRO and a member of its
nical Service Arm Committee. His
s published in national journals



Frank W. Sullivan, M.D.
President

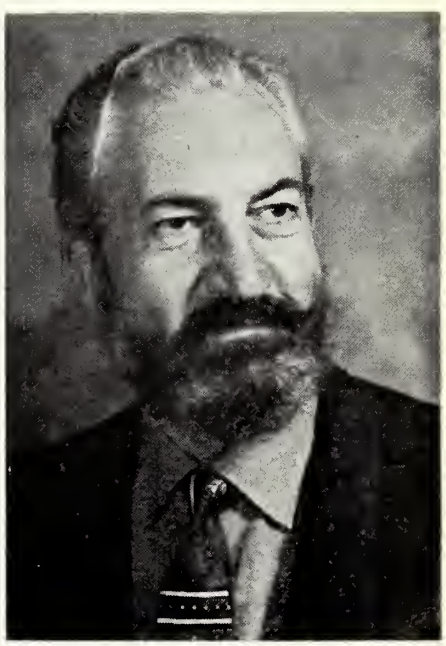
and presented before national organizations qualify Doctor Sullivan as an authority on PSRO, peer review, and medical ethics in general and particularly in the area of psychiatric services.

Doctor Sullivan is certified by the National Board of Medical Examiners and the American Board of Psychiatry and Neurology. He is a Fellow of the American Psychiatric Association and has received two certificates of commendation from the APA for chairmanship of the Ad Hoc Committee on PSRO in 1974 and chairmanship of the Task Force on Peer Review in 1975. Other APA activities include: Chairman of the Commission on Standards of Practice and Third Party Payment, Faculty of the 3rd and 4th APA Institute on Government Relations in Washington, D.C., APA Witness before the U.S. House of Representatives Subcommittee on Retirement and Employment Benefits October 8, 1974, and manuscript reviewer for the *American Journal of Psychiatry*. Doctor Sullivan is also a consultant to the U.S. Department of Defense, CHAMPAS Ambulatory Review Program for the National Institute of Mental Health.

Doctor Charles B. Round, past Chief of Surgery at Kent County Memorial Hospital was graduated from Brown University in 1930 and from Harvard Medical School in 1942. He served as a major in the Army Medical Corps from 1943 to 1947, and completed his post-graduate residency in Boston, before coming to Rhode Island to practice in 1951.

Doctor Round was an associate surgeon at Rhode Island Hospital from 1951 to 1970 and is currently a consultant surgeon at that hospital. He is also a courtesy surgical staff member at Roger Williams General Hospital.

(Continued on next page)



Charles B. Round, M.D.
Vice President

He is a past president of the Rhode Island Chapter of the American College of Surgeons and is a 2nd term governor of the American College of Surgeons. He is a past president of the Kent County Medical Society and a past secretary of the Rhode Island Medical Society.

Doctor Round is a member of the Providence Surgical Society, and of the honorary society Sigma Xi.

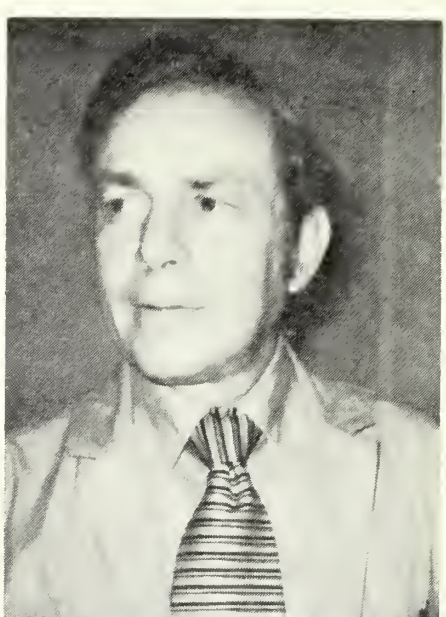


Joseph E. Caruolo, M.D.
President-Elect

J. E. Caruolo, M.D., a native of Providence, and a graduate of Classical High School and the University of Rhode Island, holds medical degrees from Tufts University and in surgery from the University of Minnesota. He held a fellowship in surgery at the Mayo Foundation and Mayo Clinic from 1951 to 1955. Certified by the American Board of General Surgery and a fellow of the American College of Surgeons, Doctor Caruolo has practiced general surgery in Providence since 1955.

His activities include Residency Review Examiner for the American College of Surgeons, American Medical Association, and American Boards in the Surgical Specialties; past president of the Providence Medical Association; past president of the Providence Surgical Society; member of the Blue Cross Board of Directors and of the Blue Shield Board of Directors.

Doctor Caruolo is Director of the Division of General Surgery at Roger Williams Hospital, and is a clinical instructor in surgery at Brown University.



Melvin D. Hoffman, M.D.
Secretary

Melvin D. Hoffman, M.D., Providence internist, is a graduate of Providence College (1948) and Hahnemann Medical College in Philadelphia (1953). He served his internship at Rhode Island Hospital from 1953 to 1957; and he is currently a staff member of Rhode Island Hospital and Miriam Hospital, a courtesy staff member at Butler Health Center and Women and Infants Hospital, and a consulting physician at Woonsocket Hospital.

Doctor Hoffman is certified by the American Board of Internal Medicine; and he holds a clinical assistant professorship in the medical program at Brown University.

He served the Fleet Marine Force, 3rd Marine Division, U.S. Navy from 1943 to 1945. He is the recipient of a Purple Heart award.

Doctor Melvyn M. Gelch is a graduate of Johns Hopkins University and Harvard Medical School. After serving an internship at the First (Columbia) Division Bellevue Hospital in New York City, Doctor Gelch served residencies in surgery and neurosurgery at Bellevue, Tufts-New England Medical Center Hospital, and Rhode Island Hosp Other post graduate work include year as a Medical Officer in the U Navy and a year as a research fel in neurosurgery at Tufts-New Engl Medical Center Hospital.

Now a resident of Providence, Do Gelch holds the following positions: sociate surgeon in neurological surg at Rhode Island Hospital, clinical structor in neurological surgery at T Medical School, certified member of American Board of Neurological S gery, Fellow and member of the Rh Island Advisory Committee of American College of Surgeons.



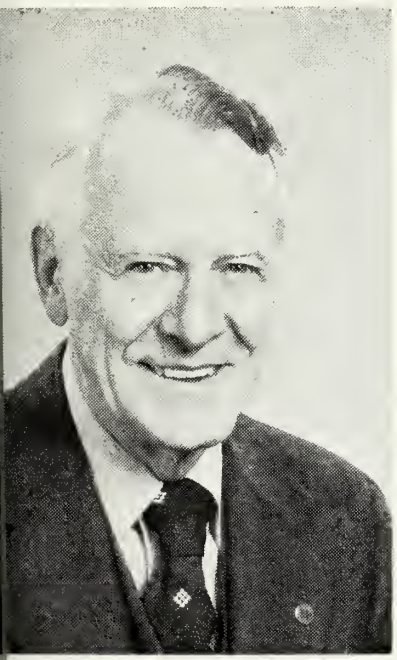
Melvyn M. Gelch, M.D.
Treasurer

Renamed chairman of the major st ing committees elected by the Hou Delegates were: Doctor Thomas P. Library; Doctor Kenneth Liffman, M ical Economics; Doctor George M han, Jr., Occupational Health. chairmen of committees are Doctor A. Dillon, Publications; and Do Peter L. Mathieu and Doctor Joh Cunningham (co-chairmen), Pul Laws.

Doctor Frank G. DeLuca is ten ary chairman of the Scientific Work Annual Meeting Committee. D Leonard S. Staudinger is Speaker o House of Delegates and Doctor Ch P. Shoemaker, Jr. is Vice Speaker.

MA President-Elect ohn H. Budd, M.D. Addressed RIMS

e Rhode Island Medical Society honored to have as a guest at the 11 Annual Meeting John H. Budd, ., President Elect of the AMA. Dr. l addressed the meeting at its even- session, urging physicians support



John H. Budd, M.D.
President-Elect, AMA

AMA and its programs in the areas of betterment of medical rds and facilities, such as health for migrant workers and other s, programs to control air pollu- Continuing Medical Education ims, and many others. He said st public relations for the AMA concern and commitment of the dual doctor.

Budd, a solo practitioner of fam- ctice and obstetrics and gynecol- Cleveland, had been a member AMA's policy-making House of ates for 10 years when he was to his first three-year term on oard of Trustees in 1970. He ran osed in his 1973 re-election bid. 6 he was elected President Elect.

Budd is a trustee of Blue Cross of east Ohio. He is also a past trustee of the Cleveland Medical Library Association. Other activities include membership in the Pasteur, the Medical Arts, and the Brooklyn Exchange clubs in Cleveland. He is active in numerous other health care organizations in the community. He is a member of the Ohio State Medical Association and is a Fellow of the American Academy of Family Physicians.

In 1973 the Cleveland Academy of Medicine bestowed its "Distinguished Membership Award" on Dr. Budd. Only 27 other members of the Academy had been accorded that honor. Dr. Budd received its "Honors of the Academy" Award in 1967. In 1974 the Academy commissioned the painting of his portrait which is now displayed in the foyer of the Academy offices. He is the first physician to be so honored during life. Also in 1974, the Ohio State Medical Association awarded Dr. Budd its Distinguished Service Citation.

For the AMA, Dr. Budd is a Commissioner on the Joint Commission on Accreditation of Hospitals and is Chairman of the AMA Committee on Commissioners. He is a former AMA Commissioner on the Medical Liability Commission.

1977 Chapin Orator: Carl W. Walter, M.D.



Carl W. Walter, M.D.
1977 Chapin Orator

Carl W. Walter, M.D. delivered the 36th Charles V. Chapin Oration at the 166th Annual Meeting of the Rhode Island Medical Society, Wednesday, May 11. His topic was "The Physician's Role in Cross Infection."

Doctor Walter is a graduate of Harvard Medical School. He is a Diplomate, American Board of Surgery, He has held numerous fellowships and surgical and teaching appointments at Peter Bent Brigham Hospital and Harvard Medical School; and is now Surgeon, Emeritus and Clinical Professor of Surgery, Emeritus at those institutions. He is also a Consultant in Surgery at the Children's Hospital Medical Center in Boston.

Doctor Walter is a member of the American College of Surgeons, American Surgical Association, New England Surgical Society, International Society for Blood Transfusion, Massachusetts Society for Medical Research and U.S. Committee of the World Health Organization. He is also Chairman of the National Research Council, Committee on Fire Research; and is a member of the National Research Council, Committee on Fire Toxicology. His present activities at Harvard Medical School include Chairman, Faculty Standing Committee on Animals; member of the Administrative board, New England Regional Primate Research Center; member of Faculty Standing Committee on Patents and a member of Committee on Patents.

In 1971 the Society of Manufacturing Engineers' Interprofessional Cooperation Award was awarded to Doctor Walter for his expertise and innovations in joining medicine and engineering. He was cited: "He has divided his life between the seeming unrelated spheres of medicine and engineering, he has united them, and the impact of his life on both has been most salutary."

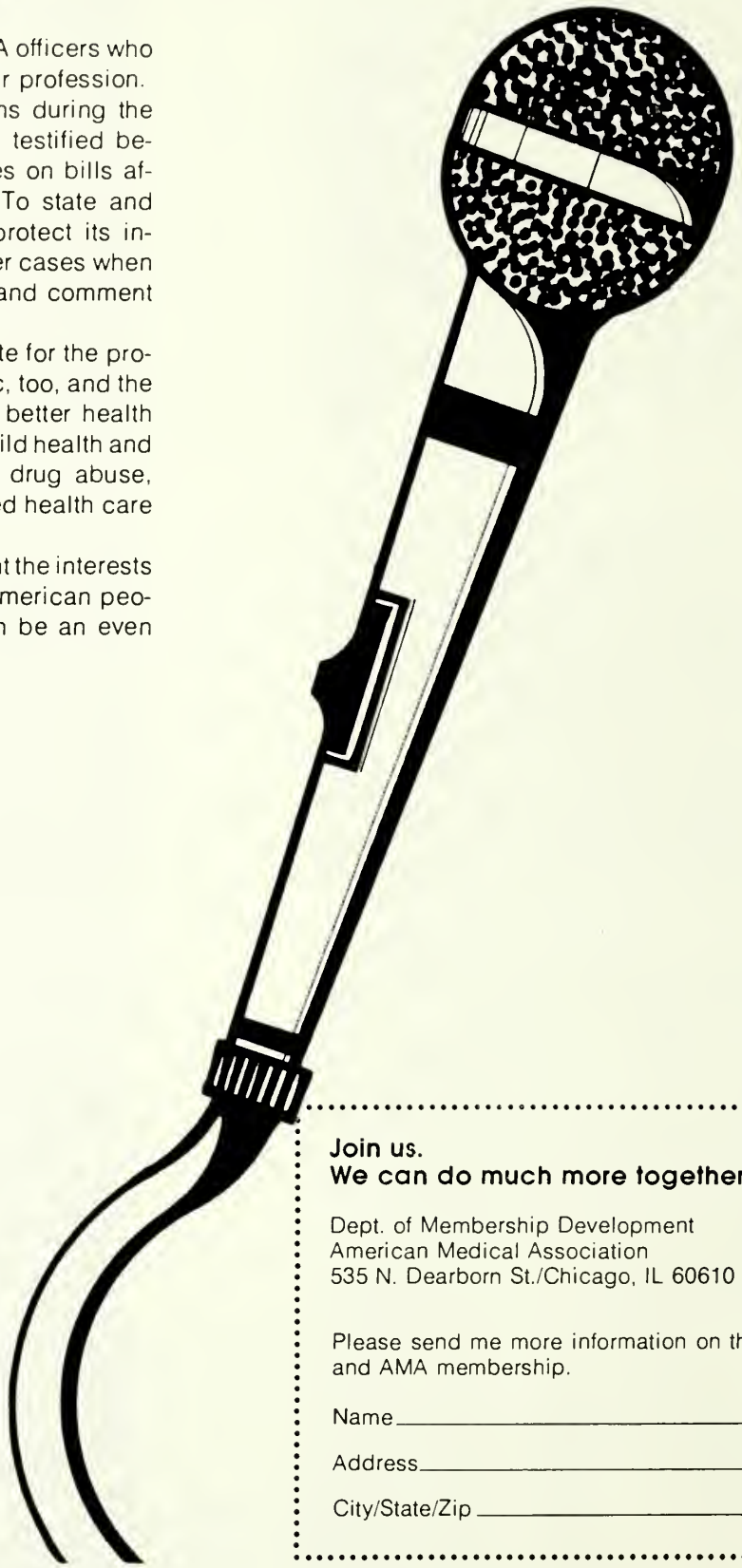
"Mr. Chairman, Members of the Committee, I am Dr. Holden ... Dr. Palmer ... Dr. Beddingfield ... Dr...."

These were but a few of the many AMA officers who have gone to the Hill to represent our profession.

On more than two dozen occasions during the 94th Congress, AMA representatives testified before Congressional health committees on bills affecting the delivery of health care. To state and explain our profession's views. To protect its interests. In addition, there were 72 other cases when the AMA submitted written analysis and comment on legislation.

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The AMA goes to the Hill to represent the interests of the American physician and the American people. With your support, the AMA can be an even more effective spokesman.



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Before prescribing, see complete prescribing information in the package insert, or in PDR, or available from your Pennwalt representative. The following is a brief summary. **Indications:** Zaroxolyn (metolazone) is an antihypertensive diuretic indicated for the management of mild to moderate essential hypertension as sole therapeutic agent and in the more severe forms of hypertension in conjunction with other antihypertensive agents. Also, edema associated with heart failure and renal disease. **Contraindications:** Anuria, hepatic coma or precoma, allergy or sensitivity to Zaroxolyn. Or, as a routine in otherwise healthy pregnant women. **Warnings:** In theory cross-allergy may occur in patients allergic to sulfonamide-derived drugs, thiazides or quinethazone. Hypokalemia may occur, and is a particular hazard in digitalized patients; dangerous or fatal arrhythmias may occur. Hyponatremia and hyperuricemia may be noted or precipitated. Considerable potentiation may occur when given concurrently with furosemide. When used concurrently with other antihypertensives, the dosage of the other agents should be reduced. Use with potassium-sparing diuretics may cause potassium retention and hyperkalemia. Administration to women of childbearing age requires that potential benefits be weighed against possible hazards to the fetus. Zaroxolyn appears in the breast milk. Not for pediatric use. **Precautions:** Perform periodic examination of serum electrolytes, BUN, uric acid, and glucose. Observe patients for signs of fluid or electrolyte imbalance. These determinations are particularly important when there is excessive vomiting or diarrhea, or when parenteral fluids are administered. Patients treated with diuretics or corticosteroids are susceptible to potassium depletion. Caution should be observed when administering to patients with gout or hyperuricemia or those with severely impaired renal function. Hyperglycemia and glycosuria may occur in latent diabetes. Chloride deficit and hypochloremic alkalosis may occur. Orthostatic hypotension may occur. Dilutional hyponatremia may occur in edematous patients in hot weather. **Adverse Reactions:** Constipation, nausea, vomiting, anorexia, diarrhea, bloating, epigastric distress, intrahepatic cholestatic jaundice, hepatitis, syncope, dizziness, drowsiness, vertigo, headache, orthostatic hypotension, excessive volume depletion, hemoconcentration, venous thrombosis, palpitation, chest pain, leukopenia, urticaria, other skin rashes, dryness of mouth, hypokalemia, hyponatremia, hypochloremia, hypochloremic alkalosis, hyperuricemia, hyperglycemia, glycosuria, raised BUN or creatinine, fatigue, muscle cramps or spasm, weakness, restlessness, chills, and acute gouty attacks. **Usual Initial Once-Daily Dosages:** mild to moderate essential hypertension—2½ to 5 mg; edema of cardiac failure—5 to 10 mg; edema of renal disease—5 to 20 mg. Dosage adjustment may be necessary during the course of therapy. **How Supplied:** Tablets, 2½, 5 and 10 mg.

References:
1. Dornfeld L, Kane R: Metolazone in essential hypertension: The long-term clinical efficacy of a new diuretic. *Curr Ther Res* **18**: 527-533, 1975
2. Data on file, Medical Department, Pennwalt Prescription Products

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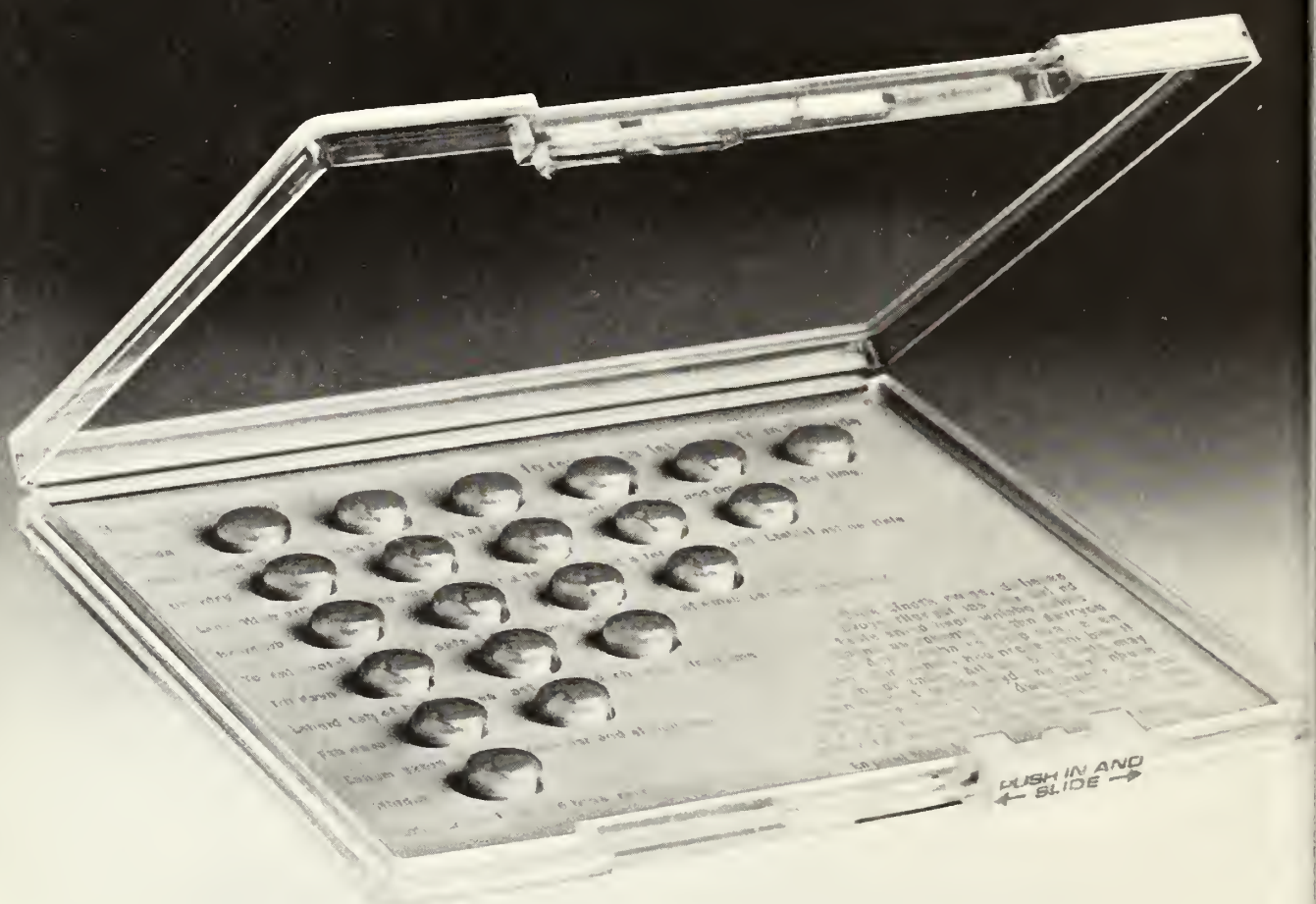
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Parke-Davis has introduced a new disposable, incontinent pad-reusable pants system, called Unigard. Composed of a polyethylene backed pad which features a new superabsorbent polymer which will hold up to 12 times its weight in fluid, plus a layer of nonwoven rayon to keep skin dry. A machine-washable snap-on pant enhances clothing and bed linen protection.

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Litton has a new 3-channel electrocardiograph called the MULTISCRIPTOR EK 33, with models for 220 V or 115 V current, or 12 V from 2 rechargeable 6 V batteries. Its weight is 17.9 lbs., may be used in office or on house calls. Records three tracings simultaneously, with six programs which are selected by one switch. It is in safety class II, with floating input in all three channels.

* * *

Gould has a new cardiac output computer designed for use at the bedside or in the OR. Known as the Gould Statham Model SP1425, it uses the thermodilution technic to accurately measure and display cardiac output on a digital readout. Alerts the operator if injectate volume is faulty and provides an electrical signal if the catheter itself is faulty.

* * *

Searle Laboratories has a new disposable uterine sound. Called the Mark 7, it is dispensed in individual sterile packaging. It has a narrow shaft and a sliding collar which, when positioned against the cervix after complete introduction, will indicate the depth of the cavity.

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Resuscitation Laboratories announces the world's smallest cardioscope, the MINICARD. It is pocket sized, weighs less than one pound, and attaches directly to the chest by moistening the electrodes. No wires. It will instantly display the cardiogram on a 2-inch screen. Has adjustable scanning rate and will show heart rate when set for a scan of 12 or 25. It operates instantly when the start button is pushed and shut-off in one minute to conserve batteries. Comes with a charger which takes either house current or automobile batteries as a power source.

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Wyeth Laboratories announces the availability of Unipen® (sodium nafcillin) as the monohydrate, and Omnipen®-N (ampicillin sodium, in Piggyback Units for convenient, economical intravenous therapy.

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Eli Lilly announces that Nalfon® (fenoprofen calcium) now includes in its indications the treatment of osteoarthritis in addition to the symptomatic treatment of rheumatoid arthritis. Less joint pain and reduction of objective findings are observed along with the demonstration that the drug is usually well tolerated.

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Mead Johnson announces Deapril-®ST, a combination of three dihydrogenated ergot alkaloids, for the treatment of symptoms of the elderly such as moderate mood depression, unsociability, confusion, dizziness and lack of self care. It is marketed as 1 mg sublingual tablets.

* * *

CLINITEST reagent tablets by Ames are now packaged in round bottles — greater convenience for the diabetic patient. Package sizes are 100s with child-proof-cap; 100s with exclusion, non-child-proof-cap; and 250s for hospital and laboratory use.

Statements are abstracted from manufacturers' news releases and are not necessarily endorsed by the **Rhode Island Medical Journal** or the **Rhode Island Medical Society.** Most items reprinted courtesy of the **Indiana State Medical Association.**

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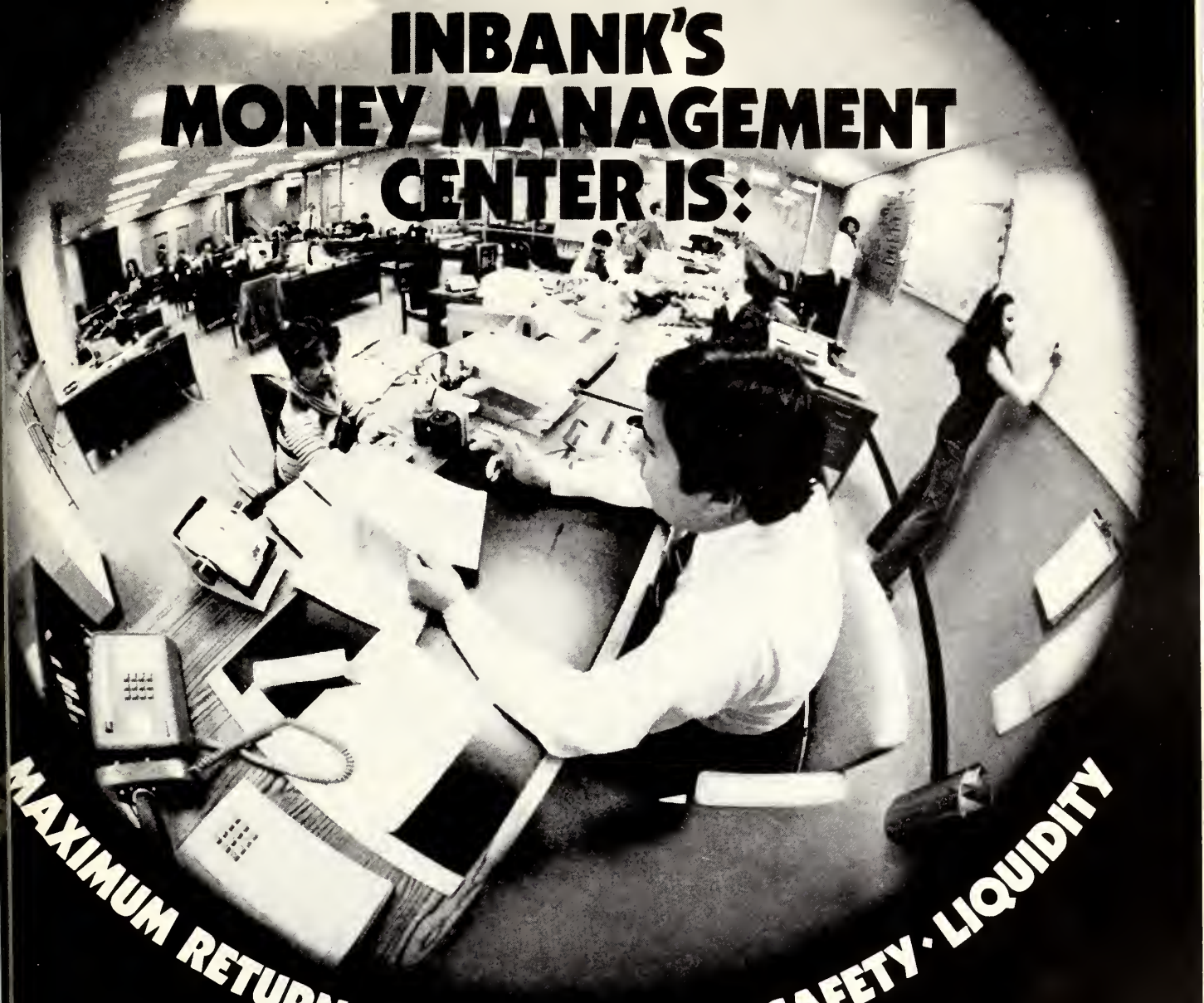
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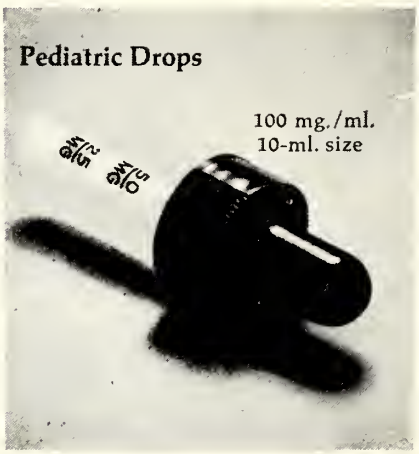
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Medullary Thyroid Carcinoma: Report Of Two Cases, Clinicopathological Aspects And Its Management

Serum Calcitonin Determination Is Diagnostic

By Fernando S. M. Angeles, M.D.
Francis P. Catanzaro, M.D., F.A.C.S.
Allan A. DiSimone, M.D., F.A.C.S.

Medullary thyroid carcinoma (MTC) is a rare tumor with an incidence varying from 5 to 10 per cent of thyroid carcinoma, slightly predominant in females, average age of 50, and occasionally seen in children.

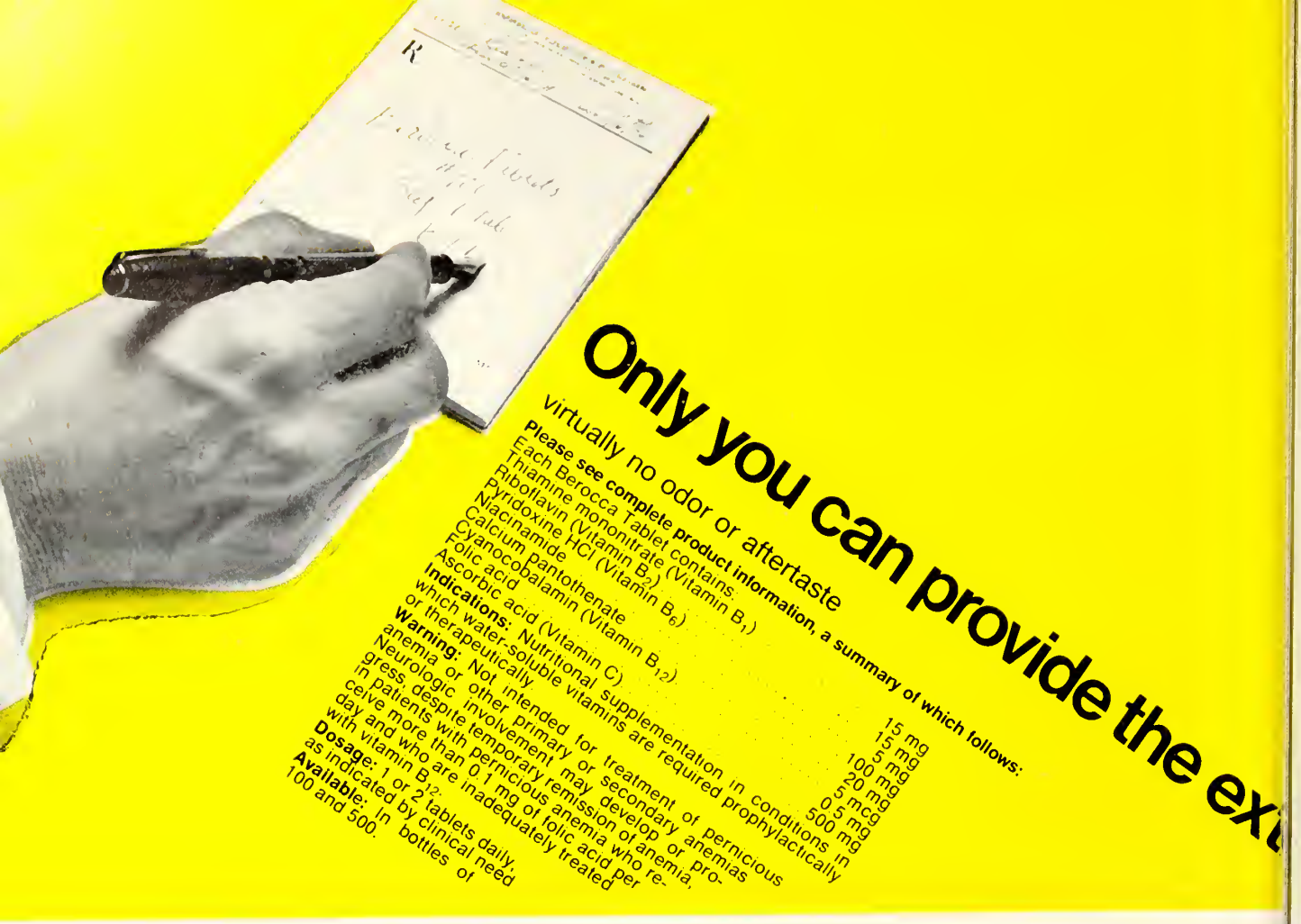
There are two known types: (1) sporadic or non-familial, and (2) familial (autosomal dominant).

MTC was first recognized in 1959 by Hazard. William et al in 1966 described its familial tendency and its association with pheochromocytoma and multiple mucosal neuromata, and noted the presence of amyloid deposits in the tumor tissue. It is conceivable that the thyroid tumor associated with pheochromocytoma, reported by Eisenberg in 1932 and again by Sipple in 1962, is MTC. The latter found it fourteen times (MTC in association with pheochromocytoma) more common than in the general population, and bilateral in 70 per cent of cases. In 1968 no less than 13 investigators reported that this type of tumor is associated with high levels of serum calcitonin. Others have also reported the presence of elevated prostaglandin, histaminase, and serotonin in the serum. Of these, calcitonin is without doubt the most important, as a rise of calcitonin in the serum is indicative of the presence of MTC. In most cases this test is now used routinely preoperatively for the diagnosis, postoperatively for follow-up, and in the familial type for screening purposes, with a very high degree of accuracy. Calcitonin when first isolated was thought to have originated from the thyroid cells. It is now known that this hormone, a 32-unit polypeptide chain with a molecular weight of 3,000, is derived from the ultimobronchial bodies, which fuse with the thyroid gland in mammals. Their cells have a characteristic microscopic appearance, which is now recognized to be similar to that of the thyroid C-cells, but definitely different from thyroid follicular cells.

Calcitonin acts by inhibiting bone resorption and decreasing net movement of calcium

(Continued on next page)

FERNANDO S. M. ANGELES, M.D., *Attending Surgeon, Department of Cardiovascular and Thoracic Surgery; St. Joseph Hospital, Fatima Hospital, Roger Williams Hospital, and The Miriam Hospital.*
FRANCIS P. CATANZARO, M.D., F.A.C.S., *Chief of Surgery; St. Joseph Hospital and Fatima Hospital*
ALLAN A. DISIMONE, M.D., F.A.C.S., *Visiting Surgeon; St. Joseph Hospital and Fatima Hospital.*



from bone to blood. This effect will decrease serum calcium concentration only when bone turnover is relatively high. At the same time, it also increases the urinary excretion of calcium, magnesium, and hydroxyproline. The other hormones which also may be elevated are prostaglandin and serotonin, which may account for the rare but troublesome diarrhea that may occur in patients with MTC.

The associated familial syndrome seen are: pheochromocytoma (5 per cent of cases); multiple mucosal neuromatas; ganglioneuromas; Marfan-like syndrome with pes cavus; and hyperthyroidism, secondary to presence of parathyroid adenoma, or hyperplasia (the latter may be secondary to elevated calcitonin).

REPORT OF CASES

CASE 1: A 53-year-old white male was admitted to the hospital for evaluation of a mass in the right lobe of the thyroid gland and also a mass in the right cervical area. He noted its presence about a month and a half prior to admission while shaving. It was slightly tender to palpation, and when it did not disappear after three weeks, he sought consultation. In addition, he also complained of a sticky sensation in his hypopharynx on swallowing and "weakness" of his voice, but no hoarseness.

Family history was not significant. He was, however, mildly diabetic. He had had a cholecystectomy four years prior to admission, and an upper gastrointestinal series at that time which showed a small duodenal ulcer. However, he had had no recurrence of symptoms.

Pertinent physical findings were confined to the neck, which revealed a small nodule in the anterior cervical chain, slightly tender, and a mass in the right lobe area of the thyroid gland which appeared to be firm, nontender, irregular, and fixed to the surrounding tissues.

Chest x-ray examination and other labora-

tory data were all within normal limits, except for a low T4 and slightly elevated blood sugar and CPK. Serum cathecholamine was 84.2 micrograms per cent. The thyroid scan showed a cold nodule in the right lobe.

With a preoperative diagnosis of possible thyroid carcinoma with neck metastases, an exploration was performed through a transverse neck incision. A right hemithyroidectomy with isthmusectomy, together with a modified neck dissection with preservation of the sternocleidomastoid muscle and eleventh cranial nerve, was carried out. On frozen section the tumor was initially reported as a poorly differentiated carcinoma of the right lobe of the thyroid with metastases to the lymph nodes. However, after amyloid staining the characteristic amyloid stroma was definitely seen, confirming the diagnosis of MTC. Patient's postoperative course was uneventful, and he was discharged a week later.

Postoperative follow-up was hindered by difficulty in determining the serum calcitonin levels locally, so the patient was referred to the Thyroidology Service at the New England Medical Center. Calcitonin levels at that hospital, using a pentagastrin bolus, were slightly elevated, and angiography with blood samples taken at different levels indicated a slightly higher level present in the thoracic inlet area. That group performed a left thyroid lobectomy and mediastinal lymph node dissection with no evidence of tumor demonstrated in the thyroid or mediastinal lymph nodes.

This patient is presently alive and well, time after surgery, without evidence of disease.

CASE 2: This 40-year-old white female was admitted to the hospital on 6/11/66 with a nodule in the right lobe of her thyroid gland. She gave a previous history of having had a pheochromocytoma removed on the right side in 1964, followed by re-exploration for a left-sided tumor of similar origin. She was also re-explored about a year prior to admission and was found to have an allergic

(Continued on next page)



granuloma due to glove powder. There was no familial history of thyroid disease.

Surgery was performed on 6/11/66 and a diagnosis of mendullary carcinoma of the thyroid was made by the pathologists. Total lobectomy was performed on that side. There was no gross evidence of lymph node involvement. The postoperative convalescence was uneventful. She was placed on thyroid supplement and was referred to the National Institite of Health for further study of this interesting disease. There, the left lobe was removed. On microscopic examination bilaterality of the mendullary carcinoma was established. She is to our knowledge alive and well at this time, 10 years after surgery.

We have been fortunate in seeing two cases of this interesting disease. Case 1 represents the sporadic type and Case 2 the familial type of the MTC syndrome.

COMMENT

Histologically this tumor is charactized by various types of cells which may be small and round, large and oval, polyhedral, or spindle-shaped. The most distinctive feature, however, is the presence of amyloid deposits. While these may be absent in some cases, their presence is necessary for the diagnosis. Grossly the tumor appears to be a whitish, gray mass, well decarcated and firm in consistency.

MTC is slow-growing, with a tendency to a chronic course, but it is more lethal than both the papillary and follicular types of thyroid carcinoma, and second only to the undifferentiated type in malignancy. It metastasizes to the cervical nodes more frequently than the papillary and the follicular types. Two thirds of the patients at the time of diagnosis have had cervical node involvement.

The sporadic or non-familial type behaves more favorably than the familial type, not only because it rarely has associated endocrine abnormalities, but also because 50 per cent of cases have unilateral preponderance; whereas, the familial type has an almost 100 per cent bilaterality, with the lesion almost always located in the upper central portion of each lobe. It has both the capacity to spread by bloodstream predominantly to the lungs, bones, and liver and also the capacity to involve or encircle vital neck structures. It is not clear, however, whether the gross size of the primary tumor is directly related to the elevation of the calcitonin or its tendency to metastasize; for in one reported case massive involvement of the neck lmyph nodes was seen without elevation of the serum calcitonin. In the presence of hypertension the possibility of a familial type with pheochromocytoma should be considered.

Since 1968, when serum calcitonin was first detected in the serum of patients with MTC, more sophisticated and accurate methods have been developed and are now in use for its determination. It is still the most important diagnostic and screening test in suspected MTC. The normal range is from 0.10 ng/ml to 0.35 ng/ml. Diagnosis by this method can be further enhanced by a calcium infusion test following intravenous infusion of calcium gluconate (15 mg/K BW over a four hour period). These patients with MTC will have a sharp rise in calcitonin while in patients with a normal thyroid gland, no response will be detected. The amyloid is best identified by electron microscopy, but light microscopy with congo red stain under polarized light may also be used for its identification.

MANAGEMENT

The treatment is purely surgical. Near total or total thyroidectomy, with modified node dissection ipsilaterally, is recommended for the sporadic type, and total thyroidectomy with modified neck dissection ipsilaterally with preservation of the sternocleidomastoid muscle and of the cranial nerve, and including dissection of the region of the submaxillary gland for the familial type.

The removal of nodes from the anterior-superior mediastinum en bloc with the thyroid gland is highly recommended in view of the tendency of the tumor to invade this region.

At the present time there is no known effective nonsurgical therapy.

PROGNOSIS

The prognosis is extremely variable, but in general in the absence of involved nodes the five-year survival is slightly less than for the papillary-follicular type. With involved nodes, the five-year survival declines

(Continued on page 321)

Anticholinergic Toxicity

Disorder Manifested By Confusion and Delirium Results When Two Or More Medications With Side-Effects Are Given

By Peter P. Reilly, M.D.

Certain medications with anticholinergic actions[7-10] can produce serious neurological and psychiatric effects (Table I). These drugs can cause a condition with peripheral anticholinergic manifestations and central[3,12,14,15] toxicity. The peripheral toxicity[5] is marked by facial flushing, decreased sweating, hyperpyrexia, decreased nasal and salivary secretion, paralytic ileus, urinary retention and tachycardia. The central toxic effects are hallucinations, disorientation, delirium, hyperactivity, and seizures. Medications which are anticholinergic[23] or have an anticholinergic side-effect[15,19] are listed in Table 2.

CASE 1: A 69 year old female was seen by me at a local hospital. She was confused, disoriented as to time, place, person, and events, with defects in recent and immediate memory; and had visual hallucinations. Further examination revealed a flushed dry skin, dilated pupils, moderate fever, tachycardia of 110, delirium, and restlessness. A tentative diagnosis of acute confusional toxic psychosis[19] was made. A careful drug history was taken by me from a relative who accompanied the patient. The history revealed that the patient had polypharmacy[6] habits. A week prior to the present crisis she had been using 100 mg of Elavil®[5,15,18,20] daily and 100 mg of Mellaril®[10, 19] daily, both orally. The patient had also intermittently used Benadryl® (diphenhydramine). Each of these medications has potent anticholinergic side-effects.[3, 12, 14] The medical history revealed that the patient had some liver dysfunction due to an alcohol problem of long standing, which caused, superimposed on the effects of advanced age, slow detoxification of the drugs by the liver. Patient was given 1.0 mg of physostigmine[2,13-15,17,21,25] intramuscularly to rule in or out anticholinergic toxicity. Within 30 minutes after the physostigmine injection the patient was less confused,[2,5,13-15,25] pulse rate had dropped from 110 to 92, bowel sounds were now heard, and visual hallucinations had lessened. An additional 0.5 mg of physostigmine was given intramuscularly with further lessening of confusion and improvement of mental status. Patient was admitted to the hospital, and over a three day period was rendered completely asymptomatic with loss of confusion; loss of disorientation as to time, place, person, and events; disappearance of

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PETER P. REILLY, M.D., *Child-Adult Psychiatrist, formerly Clinical Instructor in Psychiatry at Harvard Medical School.*

memory defects; loss of dry flushed skin; and return of mental status to premorbid level.

CASE 2: A 24 year old female, who was depressed over recent losses, which included deterioration of her marriage and subsequent divorce, gave a history of intermittent depression with a bilateral family history of multiple depressives. Patient was placed on Elavil® 50 mg at hour of sleep. She showed no clinical evidence prior to the administration of Elavil® of psychosis, schizophrenia, or organic brain syndrome and had no suicidal ideations. Later, the patient became increasingly despondent, especially when the divorce became final. At that point I lost track of her and next heard of her when she was brought to the emergency room of the hospital in a state of severe agitation. She was delirious,[17] confused,[16] disoriented[21,22] as to time, place, person, and events, and experienced intermittent visual hallucinations. This followed an impulsive ingestion of 25 to 30 fifty milligram tablets of Elavil.®. A diagnosis of acute confusional toxic psychosis[20-22,24] (anticholinergic toxicity) was made and confirmed after physostigmine 1.0 mg administered intramuscularly caused lessening of all symptoms. Over a 3 hour period the patient was given an additional 2.5 mg of physostigmine salicylate in divided doses intramuscularly with complete clearing of her mental status. Patient was discharged from the hospital asymptomatic and was referred for psychotherapy.

CASE 3. A 75 year old female, seen by me in a local hospital, presented with visual hallucinations, dry flushed skin, paralytic ileus, urinary retention, confusion, tachycardia, delirium, and confusion. Review of the drug history with relatives showed the patient had a past history of paradoxical reactions to certain medications even on low dosage. When seen, the patient was on Mellaril® 10 mg by mouth twice daily and Elavil® 10 mg by mouth at hour of sleep. Apparently, treatment had been started with Mellaril,® and approximately 24-36 hours later Elavil® was added to the regime. The patient became confused, and the above symptoms and signs rapidly evolved. Mellaril® has the strongest anticholinergic properties of all the antipsychotics, exceeded only by amitriptyline (Elavil®). In this patient the factors that appeared to have contributed to the toxicity are: 1)) advanced age, 2) slow liver detoxification, 3) slow renal excretion rate, 4) past history of paradoxical reactions to medications, 5) a low tolerance threshold, and 6) use of two medications with high anticholinergic side-effects. The patient was given 1.0 mg of physostigmine intramuscularly, and in 30 minutes she was less confused. A total of 2.5 mg of physostigmine intramuscularly over 48 hours was necessary to reverse the anticholinergic toxicity completely. One can be lulled into a state of false security, especially after the first physostigmine dose, with the sudden reduction of confusion and delirium, which can return quickly unless adequate subsequent doses of physostigmine are given. The amount of physostigmine needed in each case is highly individual and depends on such factors as age, weight, rate of absorption, rate of liver detoxification, and renal excretion rate. There is no special dosage formula that can be followed in a particular case, but if the patient is symptom free after 72 hours, it is probably safe then to assume that the toxic condition has subsided.

TABLE 1
SIGNS AND SYMPTOMS OF ANTICHOLINERGIC TOXICITY
N = 4

	Maximum	Moderate	Mild	Not Present
Visual Hallucinations	1	2	1	—
Dilated Pupils	2	2	—	—
Tachycardia	—	—	4	—
Fever	—	2	2	—
Dry Mouth	4	—	—	—
Hot Flushed Skin	1	1	2	—
Delirium	1	2	1	—
Confusion	1	2	1	—
Disorientation	2	1	1	—
Seizures	—	—	—	4
Decreased Bowel Sounds	1	2	1	—
Urinary Retention	1	1	1	1
Agitation	2	2	—	—
Sweating	1	2	1	—

MECHANISM OF ACTION OF ANTICHOLINERGIC MEDICATIONS

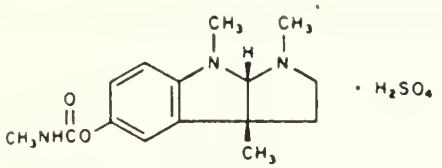
Atropine[3] and hyoscyamine[4] (scopalamine) are alkaloids of the tropane chemical structure. Their major effect is inhibition of the action of acetylcholine on structures innervated by postganglionic cholinergic nerve fibers. High doses of these antimuscarinic

agents can block neurotransmission at the autonomic ganglion[9] and at the myoneural junction. High concentrations of hyoscine[25] can cause muscular weakness and flaccid paralysis. The fact that some anticholinergics[10] are eliminated over a 24 hour period can predispose the patient to cumulative toxicity. Disruption of acetylcholine at the higher central nervous system levels accounts for the central toxic symptoms.[14] The symptom of agitated delirium,[2] which frequently is seen in anticholinergic toxicity, is explained by the depression of the inhibitory portion of the reticular activating system.

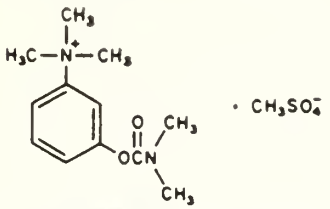
Ostfeld, et al[26,27] have shown that atropine reduces the voltage and frequency of the alpha rhythm and consistently shifts EEG rhythm to slow activity. Scopolamine,[3,25] according to Ostfeld, et al, antagonizes EEG activation by hypothalmic or reticular formation stimulation. The diminished cortical arousal potential coupled with relatively greater loss of midbrain reticular inhibition may be the mechanism that liberates diffuse visual hallucinations and agitated delirium. According to Cullumbine,[27] wide pulse pressure was demontrated even with 2 mg of atropine, which raised systolic and lowered diastolic pressures, thus increasing the pulse pressure. Fever results from both a central hyperthermic response and inhibition of sweating. Large doses of scopolamine[25] increase the basal metabolic rate and thus further elevate temperature.

MECHANISM OF ACTION OF PHYSOSTIGMINE

Physostigmine[4,11,23] is an alkaloid from the calabar bean. Physostigmine is an acetylcholinesterase which transmits the action of acetylcholine at the junctions of the various cholinergic nerve endings with their effector organs or postsynaptic sites. Physostigmine[16,17] causes anticholinesterases to accumulate at cholinergic sites and is thus capable potentially of producing effects equivalent to continuous stimulation of cholinergic fibers throughout the central and peripheral nervous systems. Physostigmine, a classical anticholinesterase agent, is a tertiary amine, which in high enough dosage has a direct blocking action on autonomic ganglia. It has anticholinesterase and direct cholinomimetic action. Physostigmine, as an anticholinesterase agent, can produce the following effects: 1) cholinomimetic actions of the muscarinic type at autonomic effective organs, 2) stimulation, followed by depression or paralysis of all autonomic ganglia and skeletal muscles (nicotinic action), and 3) stimulataion with subsequent depression of cholinoceptive sites in the central system.[12]



PHISOSTIGMINE (Eserine)



NEOSTIGMINE (Prostigmine)

Physostigmine[4] has both central[12] and peripheral cholinomimetic actions. This medication should be used with great caution in persons with respiratory distress, current history of asthma, or cardiac conduction defects. Physostigmine is a powerful adjunct for the physician in the diagnosis and management of central anticholinergic toxicity, especially due to tricyclic antidepressants, antiparkinson medications, and phenothiazines.

COMMENTS

The reported incidents of anticholinergic toxicity is probably lower than the actual prevalence, which indicates that the diagnosis is not being made as aften as the condition exists. In our efforts to calm anxiety and reduce confusion quickly with medication, we may lose sight of the possibility that these symptoms may have been caused by cumulative side-effects of medications already in the system of the patient. We have all encountered the patient with polypharmacy habits who is always searching for new instant cures. A group of medications often used for depression is that of the tricyclic antidepressants, which, if used judiciously, are therapeutically useful, but, if taken in

(Continued on next page)

TABLE 2

Medications with Anticholinergic Properties or Side-Effects

1) Atropine Products[2,27] (Belladonna Alkaloids)
   - Atropine[23,27]
   - Scopalamine[23,25,26]
   - Hyoscamine[23,25,26]

2) Antihistamines[23]
   - Benadryl (Diphenylhamine)
   - Phenergan (Promethazine)

3) Antipsychotics[10,19,23]
   - Phenothiazines—Alphatic Group (Tricyclic Chemical Ring)
     - —Chlorpromazine (Thorazine)
     - —Triflupromazine (Vesprin)
     - —Promazine (Sparine)
   - Phrenothiazines — Piperidine Group[19,23] (Tricyclic Chemical Ring)
     - —Thiordazine (Mellaril) (Highly Anticholinergic)
     - —Mesoridazine (Serentil)
     - —Piperacetazine (Quide)
   - Phrenothiazines — Piperazine Group[19,23]
     - —Carphenazine (Proketazine)
     - —Tricyclic Chemical Ring
     - —Acetophenazine (Tindal)
     - —Prochlorperazine (Compazine)
     - —Thiopropazate (Dartal)
     - —Perphenazine (Trilafon)
     - —Butaperazine (Repoise)
     - —Trifluoperazine (Stelazine)
     - —Fluphenazine (Permatil) (Prolixin) (DiBenazrapines) (Tricyclic Chemical Ring)
     - —Loxapine
     - —Clozapine
   - Butyrophenones[19]
     - —Haloperidol (Haldol)
   - Indolamines[19]
     - —Molindone

4) Tricyclic Antidepressants[5,10]
   - Amitriptyline (Elavil—the most anticholinergic of the tricyclic antidepressants)
   - Nortriptyline (Aventyl)
   - Protriptyline (Vivactyl)
   - Imipramine (Trofranil)
   - Desipramine (Norpramin) (Pertofrane)

5) Monamine Oxidase Inhibitors[10]—Not as anticholinergic as the tricyclic antidepressants
   - Hydrazines
     - —Iproniazid
     - —Phenelzine—Nardil
     - —Isocarboxide—Marplan
     - —Nialamide—Niamid
     - —Non-hydrazines
     - —Tranylcypromine—Parnate

6) Lithium
   - a. Lithium Chloride—the most anticholinergic of the lithiums.
   - b. Lithium Citrates—has intermediary anticholinergic properties.
   - c. Lithium Carbonate—the least anticholinergic of the lithium products.

7) Antiparkinson Agents[23,28]
   - —Biperidin (Akineton)
   - —Benztropine Mesylate (Cogentin)
   - —Chlorphenoxamine (Phenoxene)
   - —Cycrimine (Pagitane)
   - —Diethazine (Diparcol)
   - —Diphenhydramine (Benadryl)
   - —Ethopropazine (Parsidol))
   - —Orphenadrine (Disipal)
   - —Procyclidine (Kemadrin)
   - —Trihexyphenidyl (Artane)

excess, as in Case 2, can quickly result in anticholinergic toxicity or death from cardiac arrythmia.

It is important to take a drug history from every patient before prescribing medication, since it will help predict probable response to a given medication; help make dosage calculations easier; determine whether the patient is a reliable drug taker; discover whether the patient has polypharmacy habits, and high or low tolerance to medications; determine if the patient is subject to addictions, habituations, idiosyncratic or paradoxical reactions; or ascertain whether he responds appropriately when a therapeutic dose is given. It is also helpful to know how blood relatives respond to similar medications, since this knowledge may assist in predicting the patient's response.

SUMMARY

1) Make an accurate diagnosis. 2) Choose a drug that favorably relates to a family drug history. 3) Start with a single medication whenever possible. 4) Choose another medication if no substantial improvement occurs in a reasonable period of time. 5) If a second medication is to be added, decide whether the two medications are chemically compatible.

Anticholinergic toxicity[8] (atropine toxicity), manifested by a toxic confusional or delirious state, is most often seen when two or more medications with anticholinergic side-effects are given, especially in the elderly[6] patient.

ACKNOWLEDGEMENT

Grateful appreciation to my daughter Chris, for preparing the illustrations.

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(Continued on page 322)

Chronic Atrial Fibrillation: Spontaneous Conversion To Sinus Rhythm

Improvement In Arrythmia May Actually Represent A Worsening Of The Conduction System

By Abdul Hakim Khan, M.D.
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Spontaneous conversion of chronic atrial fibrillation which has been present for many years to normal sinus rhythm is a rare phenomenon, and only a few cases have been reported in the literature. The purpose of this paper is to present two cases manifesting this phenomenon. An attempt is made to explain this phenomenon on the basis of the accepted theories of the mechanism of atrial fibrillation.

CASE REPORTS

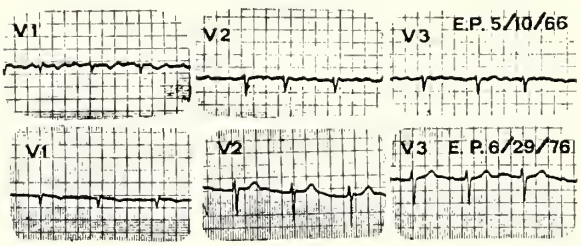
CASE No. 1. A 56-year-old asymptomatic white lady was initially seen in 1961 for a routine physical examination. Her past history revealed that she had had rheumatic fever with chorea and arthritis at age nine. Her physical examination in 1961 was within normal limits, and her cardiovascular examination in particular revealed normal blood pressure, a regular pulse, and no evidence of abnormal heart sounds or gallops. There was a faint holosystolic apical murmur, but no evidence of cardiac decompensation. Her electrocardiagram showed normal sinus rhythm and was within normal limits. Her chest x-ray examination was consistent with left atrial enlargement. Laboratory evaluation revealed normal CBC, electrolytes, BUN, urinalysis, and protein bound iodine. The patient came annually for a physical examination, which also included a routine chest x-ray study and an electrocardiogram — all of which remained essentially unchanged. In May of 1966 the patient was seen because of "nervousness in the heart." An electrocardiogram at this time revealed atrial fibrillation with a ventricular rate of about 80/min. Other than the change in the rhythm the cardiogram as well as her physical examination remained essentially the same as before.

(Continued on next page)

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However, because of history of dyspnea on exertion and palpitations digitoxin administration was started, and she was thereafter maintained on digitoxin 0.1 mg six days a week. The patient was subsequently followed up regularly every three months with EKG and chest x-ray examination performed annually. She was noted to remain in atrial fibrillation with a ventricular response of approximately 75/min. In June of 1973 the electrocardiogram revealed a normal sinus rhythm at a rate of 62/min. and PR interval of 0.56 sec. There was no other change in the electrocardiogram as compared with the previous one obtained in February of 1973. No change in her management was made. Thereafter, the electrocardiograms obtained in December of 1974, March of 1975, and June of 1976 revealed the persistence of normal sinus rhythm with first degree A-V block but shorter PR interval of 0.32 sec. She continues to be asymptomatic and her physical examination remain within normal limits.



CASE No. 1. Rhythm strips from electrocardiogram. Upper strip shows atrial fibrillation. Lower strip, ten years later, reveals conversion to sinus rhythm.

COMMENTS: This patient developed atrial fibrillation at an early age of 46 probably on the basis of rheumatic mitral valve disease. After remaining in atrial fibrillation for about six years the patient spontaneously converted to normal sinus rhythm and has now remained in normal sinus rhythm for approximately six years.

CASE No. 2. A 63-year-old white lady was seen in July of 1963 for a routine physical examination. The examination was essentially within normal limits except for the finding of an occasional ectopic beat. The electrocardiogram revealed a normal sinus rhythm with rare atrial ectopic beats. Otherwise, it was within normal limits. The chest x-ray study was normal. The patient was subsequently seen in November of 1965 when she came with complaints of weakness and fatigue on exertion. Examination at the time revealed an irregular pulse at a rate of 104/min. Blood pressure was 115/70. Neck veins were engorged and carotids were normal. The PMI was not felt, but the heart sounds were normal. An apical systolic murmur was heard by the examining physician. There was evidence of mild to moderate cardiac decompensation. Routine laboratory values were within normal limits as was also the protein bound iodine. The chest x-ray examination revealed slight enlargement of the cardiac silhouette. The electrocardiogram revealed atrial fibrillation at a rate of approximately 104/min. Otherwise, it had not changed from the electrocardiogram of 1963. Digitoxin administration was started in a dosage of 0.2 mg five days a week, which was later changed to digoxin 0.25 mg five days a week. Patient also received intermittent diuretic therapy. Yearly EKG and chest x-rays have revealed no further changes.

In June of 1974 the patient came for her follow-up visit and was noted to be in regular rhythm. The electrocardiogram was performed and revealed the presence of sinus rhythm with occasional atrial ectopic beats. Her electrocardiograms, subsequently, including the one done in November of 1974, continued to show the presence of sinus rhythm with normal conduction times and occasional A-V junctional beats. However, in November of 1975 she had reverted to atrial fibrillation and has remained so until the last visit in July, 1976.



CASE No. 2. Rhythm strips from electrocardiogram. Upper strip shows atrial fibrillation. Lower strip, nine years later, reveals spontaneous conversion to sinus rhythm.

COMMENTS: The 76-year-old lady was first seen in atrial fibrillation in 1965 at the age of 65. The atrial fibrillation was probably secondary to rheumatic heart disease. She

was treated with digitalis and intermittent diuretic therapy because of mild left ventricular failure, and she remained free of symptoms. Her atrial fibrillation spontaneously converted to normal sinus rhythm after about nine years, but she was noted to have developed atrial fibrillation again after a year and a half. She continues to remain in atrial fibrillation.

DISCUSSION

Spontaneous conversion of chronic atrial fibrillation is a rare condition and so far only a few cases have been described.[1–13] Holtzman reported two cases of rheumatic mitral valve disease with huge left atria and atrial fibrillation.[6] Both cases reverted spontaneously to normal sinus rhythm after eighteen and twenty-four years respectively. One patient subsequently died, and at autopsy the left atrium was noted to be a huge dilated fibrotic sac. Holtzman concluded that the atrial ectopic focus ceased to exist because it became incorporated into the fibrotic process involving the atria and thus allowed the sinus mechanism to take over. Paul Dudley White remarked that he had encountered occasional cases of chronic atrial fibrillation with spontaneous conversion to normal sinus rhythm. The majority of these cases were described as having rheumatic mitral valve disease.

Atrial fibrillation is generally explained on the basis of two mechanisms, i.e., the unifocal theory and circus movement or re-entry phenomenon.[14–16] Electrophysiologic studies of Sano and Scher suggest that the unifocal theory accounts for the initiation of atrial fibrillation, while the re-entry phenomenon is mainly responsible for sustaining it.[14] With either of the two mechanisms of atrial fibrillation it is conceivable that advanced fibrosis of the atria may influence the course of atrial fibrillation. In the case of the unifocal theory, the triggering mechanism may be eradicated because it becomes incorporated in the fibrotic process.[6] This will then allow the sinus mechanism to take over. In the case of the re-entry phenomenon it is possible that, even in the absence of extensive fibrosis, a small but appropriately located fibrotic lesion may interrupt the re-entry pathway and thus terminate atrial fibrillation, allowing the sinus mechanism to take over. In either situation, of course, it is presumed that the sinus node is potentially capable of taking over once atrial fibrillation ceases. It is therefore possible that the sinus mechanism may fail to take over in situations where atrial fibrillation exists in conjunction with sick sinus syndrome. Here the sinus mechanism may fail to take over, leading to sinus arrest[9] which may occasionally require pacemaker therapy.[12]

Recently, it has been suggested that ouabaine, by inhibiting conduction in the atrium and by increasing the atrial effective and refractory periods, may contribute to conversion of atrial fibrillation to normal sinus rhythm.[17] However, this effect was reported during acute administration of digitalis and most likely does not apply to the cases reported here, who had been on digitalis for a prolonged period. Thus, chronic atrial fibrillation may change spontaneously to sinus rhythm after a number of years. Based on the mechanisms discussed here and the pathologic findings in chronic atrial fibrillation reported in the literature,[16] it would appear that this "improvement" in arrhythmia may actually represent a worsening state of the cardiac conduction system.

SUMMARY

We have described two cases of chronic atrial fibrillation which spontaneously converted to sinus rhythm. We have attempted to explain this phenomenon on the basis that fibrotic changes in the atria may interfere with the mechanisms that are responsible for the atrial fibrillation, i.e., re-entry or increased automaticity. The possibility of sick sinus syndrome coexisting with this condition is also described.

ACKNOWLEDGEMENT

We are grateful to Ms. Aline Miller for her secretarial assistance and to Mr. Milton Lipsky of Rhode Island Hospital Photo Laboratory for his technical assistance.

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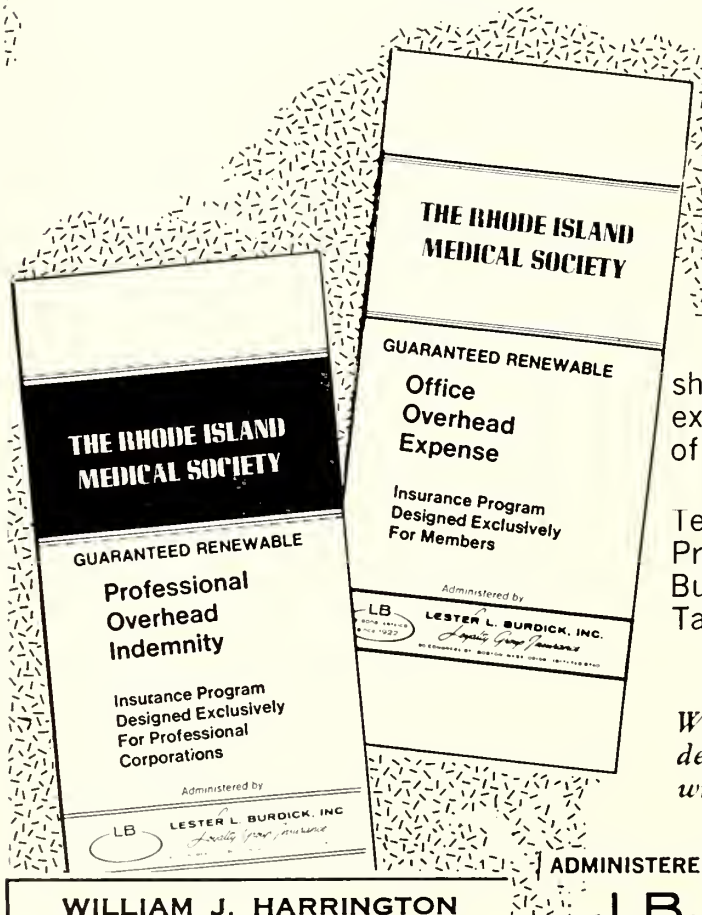
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PROGRESS NOTES:

Primary Aldosteronism--Recognition And Management

Hypertension, Hypokalemia, And Inappropriate Kaliuresis In The Absence Of Diuretic Therapy Characterize The Disorder

By C. Venkata S. Ram, M.D.

Although relatively infrequent as a cause of hypertension, primary aldosteronism has been increasingly recognized ever since the description of this distinct clinico-pathological entity by Conn in 1955.[1]

Adrenal cortical adenoma, a pathological state reponsible for primary aldosteronism (PA), represents an example of curable hypertension. Since as many as 20 per cent of the American adult population are believed to be hypertensive[2] and since among this group a vast majority have essential hypertension, the search for secondary causes of hypertension such as PA has, in general, been justifiably lax thus far. However, with improved knowledge about the pathophysiology and advances in the laboratory studies, it is now possible to identify those patients with PA with reasonable confidence and afford them the benefit of "cure" by surgical therapy. The purpose of this communication is to update the information concerning the recognition and management of PA. By definition, PA is a condition characterized by excessive secretion of aldosterone, due to autonomous hyperfunction of the adrenal cortex. In contrast, secondary aldosteronism is characterized by hypersecretion of aldosterone in the absence of adrenal cortical pathology.

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PHYSIOLOGY OF ALDOSTERONE

Aldosterone, the most potent natural mineralo-corticoid known, is secreted by the outer zone of the adrenal cortex (zona glomerulosa). Its action is to increase sodium reabsorption and potassium secretion by the distal convoluted tubule of the kidney. Other tissues, e.g., sweat and salivary glands and the gut, are also subject to aldersterone action.

Aldosterone secretion is governed by the renin-angiotensin system (RAS), ACTH and potassium balance. Of these, RAS plays the dominant role in the regulation of aldosterone secretion.

Angiotensin II, the final product of the RAS, exerts a trophic action on aldosterone biosynthesis besides its direct vasopressor activity. ACTH is known to stimulate the aldosterone synthesis directly. Changes in

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potassium balance exert an influence on aldosterone secretion. Increased serum concentration of potassium stimulates aldosterone secretion, whereas decreased serum potassium has the opposite effect. A reduced serum concentration of sodium has been shown experimentally to stimulate aldosterone secretion,[3] but this effect has not been documented in man.

Aldosterone is metabolized principally in the liver and to a minor extent in the kidney. Random blood levels of aldosterone can be unreliable in the interpretation of pathological states because of the swift changes in the secretion and clearance of aldosterone.

PATHOPHYSIOLOGY OF PRIMARY ALDOTERONISM

Aldosterone excess causes major disturbance in the body electrolyte and acid-base equilibrium. Hypokalemia with metabolic alkalosis results from the overactivity of aldosterone at the Na/K exchange site of the distal convoluted tubule. Since positive sodium balance is also accompanied by isotonic fluid retention, true hypernatremia rarely results. The increased total plasma volume leads to decreased sodium reabsorption in the proximal tubule, the so-called "escape phenomenon," which registers a new "steady state" of sodium balance.

The precise mechanism of hypertension due to PA remains unclear. The widely held view is that it is related to the net increase in the total body content of sodium.

Chronic hypervolemia in PA results in low plasma renin activity (PRA). This low PRA responds little, if at all, to maneuvers that stimulate renin secretion. Renal function is altered by chronic hypokalemia, resulting in the excretion of isotonic alkaline urine and also occasionally resulting in nephrogenic diabetes insipidus.

Single adenomas are the cause of most cases of PA, having been reported in 91 per cent in one series.[4] With the advent of newer diagnostic techniques, bilateral adrenal hyperplasia is being diagnosed with increasing frequency, but to a much lesser extent than adenomata.

The PA of adenoma is amenable to cure by surgery, whereas bilateral adrenal hyperplasia is currently best managed by medical therapy alone. Therefore, prediction of a probable pathological state of PA should be made with precision before subjecting a patient to surgery.

CLINICAL FEATURES

There are no striking physical findings in patients with PA that can help the clinician readily to separate these patients from others with essential hypertension. Patients with PA could present with symptoms of chronic hypokalemia, namely, weakness, easy fatigability, and nocturia. Frontal headache can sometimes be a symptom of PA, presumably due to chronic hypervolemia. Blood pressure elevation in PA is usually mild to moderate, but malignant hypertension has been reported.[5] It is also believed that patients with PA show less severe hypertensive changes in the retina. Hypokalemia with metabolic alkalosis is the most important feature of PA, the degree of hypokalemia depending on the severity of PA. An exception to this is the syndrome of "Normokalemic Primary Aldosteronism" described by Conn, et al.[6]

DIAGNOSTIC AIDS IN PRIMARY ALDOTERONISM

1. Serum potassium: Most patients with PA demonstrate variable degrees of hypokalemia with the exception of so-called "normokalemic aldosteronism." It is important to ensure that the patient is on adequate sodium intake before checking the serum potassium. Sodium restriction may mask the hypokalemia, since enough sodium may not be available for the aldosterone activity at the renal tubule.

Once hypokalemia is discovered it is necessary to consider other causes of hypokalemia as well (Table I). Diuretic-induced hypo-

TABLE I
CAUSES OF HYPOKALEMIA

1. Diuretic therapy
2. Gastrointestinal causes
   - Vomiting
   - Gastric suction
   - Diarrhea
   - Laxative abuse
3. Primary renal disease
4. Adrenal causes
   - Primary aldosteronism
   - Cushing's disease
5. Insulin and glucose therapy
6. Exogenous cortisol use
7. Osmotic diuresis
8. Secondary aldosteronism
9. Licorice ingestion

kalemia is quite common, and the diuretics should be withheld for at least 3 weeks before checking the serum potassium. In diuretic-induced hypokalemia, however, urinary excretion of potassium will be lower than that in PA. Some patients with PA become hypokalemic only with the use of diuretics. In this small group, urinary aldosterone levels will be diagnostic.

2. Urinary potassium: Inappropriate kaliuresis in the presence of hypokalemia is a feature of PA, but this is also seen with conditions associated with overactivity of other mineralo-corticoids as well. Patients with PA usually excrete more than 40 mEq/liter of urine. Patients with primary renal disease and secondary aldosteronism also have significant losses of potassium. Additional work-up is necessary to identify these entities.

3. Plasma Renin Activity (PRA): Hyporeninism is an important feature of PA, when interpreted along with other findings. Patients with PA demonstrate very low PRA, which does not respond appreciably to stimulating maneuvers such as salt restriction, upright posture, and administration of diuretics. Other conditions in which low PRA exists should be borne in mind (Table II).

TABLE II

CONDITIONS ASSOCIATED WITH LOW PLASMA RENIN ACTIVITY

1. Subgroup of essential hypertension
2. Expanded plasma volume from any cause
   a) sodium retention due to renal disease
   b) excessive mineralocorticoid activity
   c) excessive sodium ingestion
   d) licorice ingestion
3. Inhibition of adrenergic nervous system with drugs like propranolol and sympatholic agents
4. Diabete mellitus (15)

The following additional testing should be performed in a patient suspected of having PA in whom serum and urinary electrolyte abnormality lend a clue to the diagnosis.

4. Urinary Aldosterone: Patients with PA excrete excessive amounts of aldosterone in the urine. Urinary excretion of adosterone is suppressed in normal individuals when challenged with sodium loading, due to the negative feedback on aldosterone secretion. In contrast, however, 24 hour urinary aldosterone in patients with PA, which is high to begin with, remains unsuppressed even on sodium loading. Sodium loading can be accomplished either by increasing the oral intake of salt by 6-12 g. daily or by intravenous infusion of 2 liters of isotonic saline over a 4 hour period. Normal values for urinary aldosterone are given in Table III. The state of non-suppressible aldosterone excretion can also be demonstrated by the administration of synthetic mineralocorticoids.

TABLE III

REPRESENTATIVE NORMAL LABORATORY VALUES*

Serum potassium	3.5-5 mEq/liter
Urinary potassium	30-90 mEq/liter
Plasma aldosterone†	up to 20 ng/100ml
Adrenal vein aldosterone†	100-400 ng/100 ml
Urinary aldosterone excretion†	4-20 mcg/24 hrs.

*For subjects on normal sodium and potassium intake
†Aldosterone measurements by RIA

5. Plasma Aldosterone: In some laboratories plasma aldosterone levels are measured in the diagnostic evaluation of PA. However, due to dynamic changes in the aldosterone secretion and clearance, it cannot be recommended at this time as more reliable than measurement of the urinary aldosterone.

6. Response to Spironolactone: Spironolactone is a competitive inhibitor of aldosterone and is used in the medical management of PA. Spark and Melby[7] have suggested using spironolactone as a test in the diagnosis of PA. These workers have found that patients with PA show a hypotensive response to spironolactone therapy, as opposed to patients with secondary aldosteronism. Though this test was suggested on a sound physiological basis, response to spironolactone cannot be considered as specific for PA, as many patients with low renin essential hypertension also respond to spironolactone therapy.

7. Colonic Electrical Potential: Edmonds and Richards[8] have recommended the measurement of electrical potential difference across the rectal mucosa as an instant screening test for PA. This was based on the premise that the rectal potential difference (normal — 26±8 mV) is enhanced by aldosterone hyperactivity on the colonic mucosa. This test has never gained enthusiastic acceptance in this country. Both false positive and false negative results with the colonic potential test were recently reported, indicating its unreliability as an accurate test for the diagnosis of PA.

(Continued on next page)

LOCALIZATION

Having made the preliminary diagnosis of PA by one or more of these tests, it is necessary to localize and predict the probable pathologic state (adenoma or hyperplasia). Solitary cortical adenoma is the cause in most instances. It is necessary to differentiate this from bilateral adrenal hyperplasia, the latter condition not being benefited by surgery. The following investigations help localize the lesion of PA:

a. Adrenal Venography: Currently, this is the most definitive method of determining the pathological basis of PA. Percutaneous venography yields conclusive results in experienced hands. The possibility of inducing adrenal hemorrhage by this procedure should be recognized as a grave complication. Most tumors can be readily identified by adrenal venography.

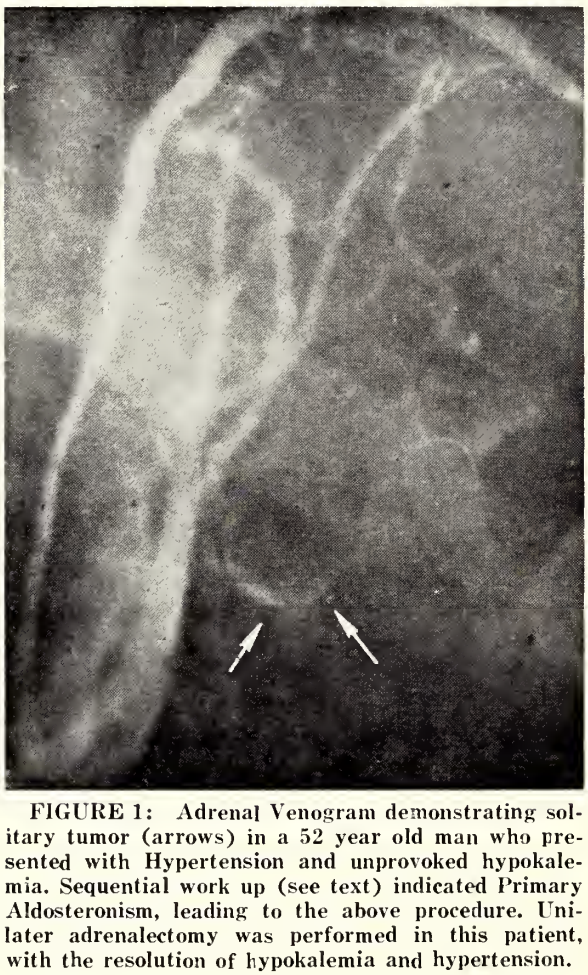


FIGURE 1: Adrenal Venogram demonstrating solitary tumor (arrows) in a 52 year old man who presented with Hypertension and unprovoked hypokalemia. Sequential work up (see text) indicated Primary Aldosteronism, leading to the above procedure. Unilater adrenalectomy was performed in this patient, with the resolution of hypokalemia and hypertension.

The accuracy is dependent on the size of the tumor itself. Measurement of aldosterone levels from the adrenal veins has been a major advance in the diagnosis of PA.[10] With this technique, it is possible not only to demonstrate the site of the lesion, but also to predict the pathological state, namely adenoma or hyperplasia. In cases of solitary adenoma the aldosterone level in the ipsilateral adrenal vein will be very high, whereas in bilateral hyperplasia levels of aldosterone will be elevated on both sides. Normal values for the adrenal vein aldosterone are given in Table III.

b. Adrenal Scanning: Conn et al[11] have developed this non-invasive technique using I^{131}-19 cholesterol. Adrenal scanning is believed to be helpful in locating the adenoma or hyperplasia of PA accurately. Adrenal imaging may be of special use for the patient in whom adrenal vein catheterization is not feasible. This technique is currently in the investigative phase only.

HYPERPLASIA vs ADENOMA

Since the hypertension of PA due to bilateral adrenal hyperplasia does not respond even to bilateral adrenalectomy, it is essential to distinguish as accurately as possible between adenoma and hyperplasia. Adrenal venography with adrenal vein aldosterone measurement is the most effective method to achieve goal. The following additional observations suggest, but not establish, the differences between adenoma and hyperplasia.

- The degree of hypokalemia and hyporeninism is much more severe in patients with adenoma than in those with hyperplasia.
- PRA is more severely suppressed in patients with adenoma than in those with hyperplasia.
- PRA in patients with hyperplasia responds in some degree to stimulating maneuvers, whereas in patients with adenoma PRA does not respond to such maneuvers.
- The circadian rhythm of aldosterone secretion is preserved in patients with hyperplasia, whereas it is disrupted in patients with adenoma..[12] Leuestcher et al[13] have successfully distinguished hyperplasia from adenoma preoperatively by using a computer-assisted multiple analysis.

MANAGEMENT

Medical: Medical therapy with the aldosterone antagonist, spironolactone, is the treatment of choice for patients with bilater-

al adrenal hyperplasia and for those patients with adenomas who are unwilling or unable to undergo surgery.

Spironolactone exerts its pharmacological activity by competitive inhibition of aldosterone secretion. The maintenance dose of spironolactone is quite variable. Frequently as much as 400 mg/day is required for optimal control of PA. The response to therapy is judged by improvement in hypokalemic metabolic alkalosis and the blood pressure. For most patients with definite PA, spironolactone therapy by itself will suffice, although a few patients require additional antihypertensive therapy. Major adverse effects of chronic spironolactone therapy include gynecomastia, epigastric discomfort, cutaneous pigmentation, loss of libido and Raynaud's phenomenon. An occasional patient who cannot tolerate spironolactone, can be managed by salt restriction and the use of potassium-sparing diuretic, e.g., Triamterene.

Surgical: Surgical therapy is recommended for patients with adenoma. These patients should be treated preoperatively with spironolactone, since it will restore the electrolyte balance and normotension, thus facilitating the surgical management.

At surgery both the adrenal glands should be adequately inspected so as not to miss occasional bilateral adenomata. Resection of solitary adenomata is preferred by some surgeons, while others recommend unilateral total adrenalectomy. Since one adrenal gland is enough for normal adrenal function, unilateral adrenalectomy does not result in hypoadrenalism. Postoperatively, the patient should be given adequate sodium intake. Potassium supplements are not necessary unless hypokalemia reappears. Electrolyte abnormalities are promptly corrected following surgery, but hypertension may persist for some period of time. The failure of blood pressure to normalize may indicate incomplete removal of the adenoma or possibly the coexistence of essential hypertension.

UNCOMMON FORMS OF PRIMARY ALDOSTERONISM

Two other forms of PA have been described by Biglieri et al,[14] indeterminate hyperaldosteronism and glucocortocoid responsive hyperaldosteronism. Both syndromes are rather uncommon. Indeterminate hyperaldosteronism has the features of classical PA with the exception that aldosterone secretion can be suppressed by the administration of deoxycorticosterone acetate. Glucocorticoid-responsive PA is said to respond to therapy with dexamethasone.

SUMMARY

Primary aldosteronism when caused by adenoma is a curable form of hypertension. The clinical findings in the small group of patients with PA do not readily differentiate them from patients with essential hypertension. Unprovoked hypokalemia and inappropriate kaliuresis are the clues leading to a suspicion of PA. The suspicion can be reinforced by the demonstration of non-suppressible, excessive aldosterone excretion and low PRA. Adrenal venography with adrenal vein aldosterone measurements clinches the diagnosis and also dictates the form of therapy, i.e., medical or surgical. It is necessary for the clinician to be aware of other causes of hypokalemia and low PRA before subjecting the patient to extensive investigation for primary aldosteronism.

CONCLUSIONS

Primary aldosteronism (PA) is implicated as a cause of hypertension in only a small fraction of the hypertensive population. PA represents an interesting model for curable hypertension. Autonomous overproduction of aldosterone is the physiological basis of PA. The triad of hypertension, hypokalemia, and inappropriate kaliuresis in the absence of diuretic therapy is characteristic of PA. With the availability of adrenal vein catheterization and aldosterone assay techniques, the pathological state responsible for PA can now be predicted with confidence. Adrenal cortical adenoma is amenable to surgical therapy, whereas bilateral adrenal hyperplasia is best managed by medical means.

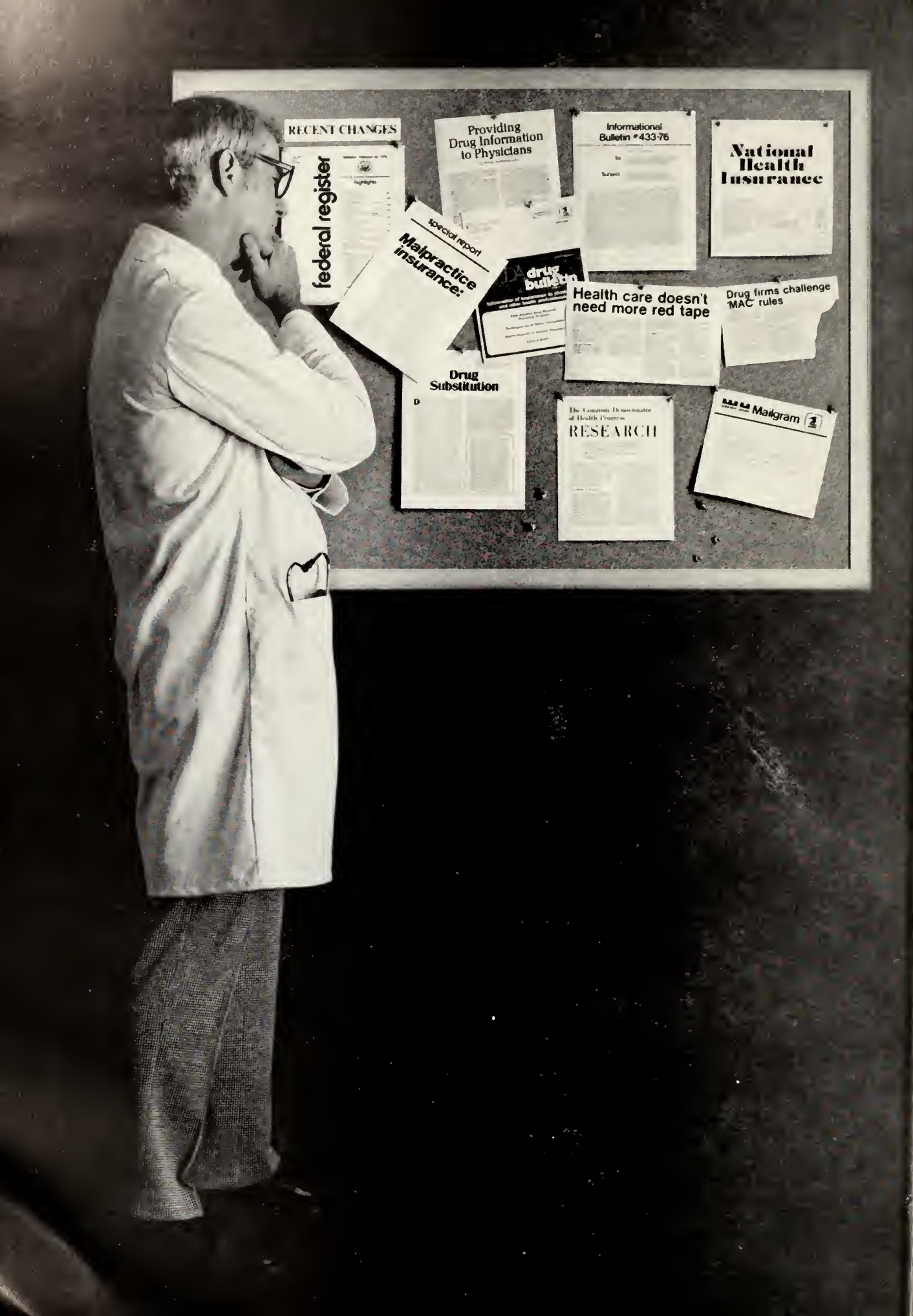
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(Continued on page 326)


RECENT CHANGES
federal register
Providing Drug Information to Physicians
Informational Bulletin #433-76
National Health Insurance
special report
Malpractice insurance:
drug bulletin
Health care doesn't need more red tape
Drug firms challenge 'MAC' rules
Drug Substitution
RESEARCH
Mailgram

THERE ARE A LOT OF PEOPLE GETTING BETWEEN YOU AND YOUR PATIENT.

Medicine today is in the spotlight, subjected to all kinds of scrutiny. Your control over patient therapy is being monitored, judged and occasionally abrogated, sometimes by unknown third parties.

The worry is that in the wake of this focus, the relationship between you and your patient will be weakened, without offsetting benefits. Consider three examples:

Drug substitution In most states, pharmacy laws, regulations or professional custom stipulate that your non-generic prescriptions be filled with the precise products you prescribe. But in the last five years, a dozen or more State laws have been changed, permitting the pharmacist in most cases to select a product of the same generic drug to fill any prescription.

Ironically, this dilution of physician control has taken place against a background of growing evidence that purportedly equivalent drug products may be inequivalent, since neither present drug standards nor their enforcement are optimal. In fact, the FDA itself says it has not enforced the same standards for hundreds of "follow-on" products that it had applied to the original NDA approvals. Thus physician control over patient therapy is being eroded with a risk that patients may be exposed to drugs of uncertain quality.

The major advertised claim for substitution is reduced prescription prices for consumers. Yet no documentation of any significant savings has been produced.

MAC Maximum Allowable Cost, MAC for short, is Federal regulation designed to cut the Government's drug bill by setting price ceilings for drugs dispensed to Medicare and Medicaid patients. Unless the prescriber certifies on the prescription that a particular product is medically necessary, the Government intends to pay only for the cost of the lowest-priced, purportedly-equivalent, generally-available product. The effect of the program may be that elderly and indigent patients will be restricted to products which someone in Washington believes are priced right. Practicing doctors will have little to say about administration of the program, since Government will have absolute authority to make its choices stick.

The drug lag The future of drug and device research depends upon a scientific and regulatory environment that encourages therapeutic innovations. The American pharmaceutical industry annually is spending more than $1 billion of its own funds and evaluating more than 1,200 investigational compounds in clinical research. Disease targets include cancer, atherosclerosis, viruses and central nervous system disorders, among others. But there is a major barrier to the flow of new drugs to your patients: The cost of the research is more than ten times what it was, per product, in 1962; and whereas governmental clearance of new drug applications took six months then, it commonly consumes two years now.

The FDA needs adequate time, of course, to consider data. But it is equally clear that the present approval process contributes to needless delay of needed therapy. That's why the increased efficiency of the drug approval process is vital to all our futures.

If these issues concern you, we suggest that you make your voice heard—among your colleagues and your representatives in State legislatures and in Washington.

It could make a difference in your practice tomorrow.

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*Copies of this study and PUREPAC's annual report are available upon request.

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Editorials

ER

New techniques in biochemical assay of tissue and, specifically, surgical pathology specimens have made possible the detection and measurement of cellular hormone receptors in tumors. This has been applied to breast cancer, where the binding of hormones, especially estrogen and progesterone, to receptors in tumor cells may serve as an indicator of potential response to hormonal chemotherapy or ablative endocrine surgery.

It has been well known from past observations that estrogen may inhibit breast cancer growth and even eradicate the tumor, albeit temporarily. Paradoxically, certain mammary carcinomas appear to be stimulated by estrogen. The problem has been to determine in advance which tumors may be amenable to varying types of hormonal therapy, since in the past a favorable therapeutic response occurred in only 30 per cent of nonselected cases, and in fact the hormonal treatment sometimes appeared to be clinically detrimental. Similarly, ablative endocrine therapy was variably effective and unpredictable.

Now, measurement of estrogen receptor (ER) adds a new tool and an additional scientific "handle" for treatment of this dread disease. The estrogen receptor site test done on surgically removed specimens has recently become part of the routine evaluation workup in many medical centers throughout the world. Surgeons are becoming accustomed to submitting tumor tissue to the pathologist at the time of biopsy (ie frozen section diagnosis). The tissue is frozen within 10-15 minutes after removal to ensure preservation of the receptors. The specimen may be kept safely in the frozen state (deep freeze) until it can be conveniently analyzed. Results can be obtained in six days. Several laboratories in New England perform the test. The fee is not inexpensive, which should be no surprise, since it requires analysis by experts using sophisticated and expensive equipment. Specimens must be carefully shipped in dry ice to prevent thawing. The average cost is $150.

Measurements indicating positive ER in tumor tissue have had in the past a predictive reliability of approximately 50 per cent; this figure is beginning to improve to approximately 70 per cent. That is, patients with positive ER tests have a 70 per cent probability of responding favorably to ablative estrogen-endocrine surgery. On the other hand, more than 90 per cent of tumors that lack ER do not respond to endocrine therapy. The test can be done on metastases as well as on the primary tumor.

It has been suggested that combining measurements of estrogen receptor and progesterone receptor may better the predictive results. From the pathologist's point of view the test has complex variables, since it is done on tumors of varying cellularity (with intervening non-cancerous connective tissue stroma) and differentiation which might be expected to alter the numbers of ER sites found in any given tumor. Nevertheless, despite its inherent complexities and blatant imperfections, it is an improvement over the previous unpredictable situation. Furthermore, correlation by the pathologist of the borderline ER measurements with the histologic content of the tumor (ie, cells vs connective tissue stroma ratio) in an adjacent section may be helpful in deciding whether or not to place the borderline patient in the positive ER group for treatment.

Finally, there remains the potential for utilizing the test results as part of the recent trend toward adjuvant (prophylactic) treatment protocols to attempt to improve survival figures by aggressive early management employing a variety of agents in the immediate post-mastectomy period.

(Continued on next page)

As in all instances of the introduction of new "routine" tests in laboratory medicine, the true extent of the usefulness of the ER test in the management of breast cancer must await the test of time. Nonetheless, as is so often the case in medicine, the new test may ultimately become one contribution that must be correlated with other existing or newly developed clinico-pathologic variables before its true potential can be clearly determined.

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"COPING" — AN ESSAY

The term "coping"* has been in too popular use for several years.** Usage broadens and diversifies its meaning until it means many different things to many different people. Today it is used with simultaneously subjective and objective meaning: "I can or can't cope (put up with things) and others can see I can or can't cope." It is a relative term, since a person may seem to be coping as viewed by others, but may conceive (sense) (feel/think) of himself as not coping and **vice versa.** To cope seems to mean a sense of being on top of things: "I feel on top of the world." Not coping may be subjectively or objectively phrased as: "I'm afraid I'll lose control," "I'm going to go to pieces," "I'm losing my grip," "I feel I'm becoming unstrung," "I'm losing my sense of mastery."

*Webster: "to struggle or contend on equal terms with or with some success."

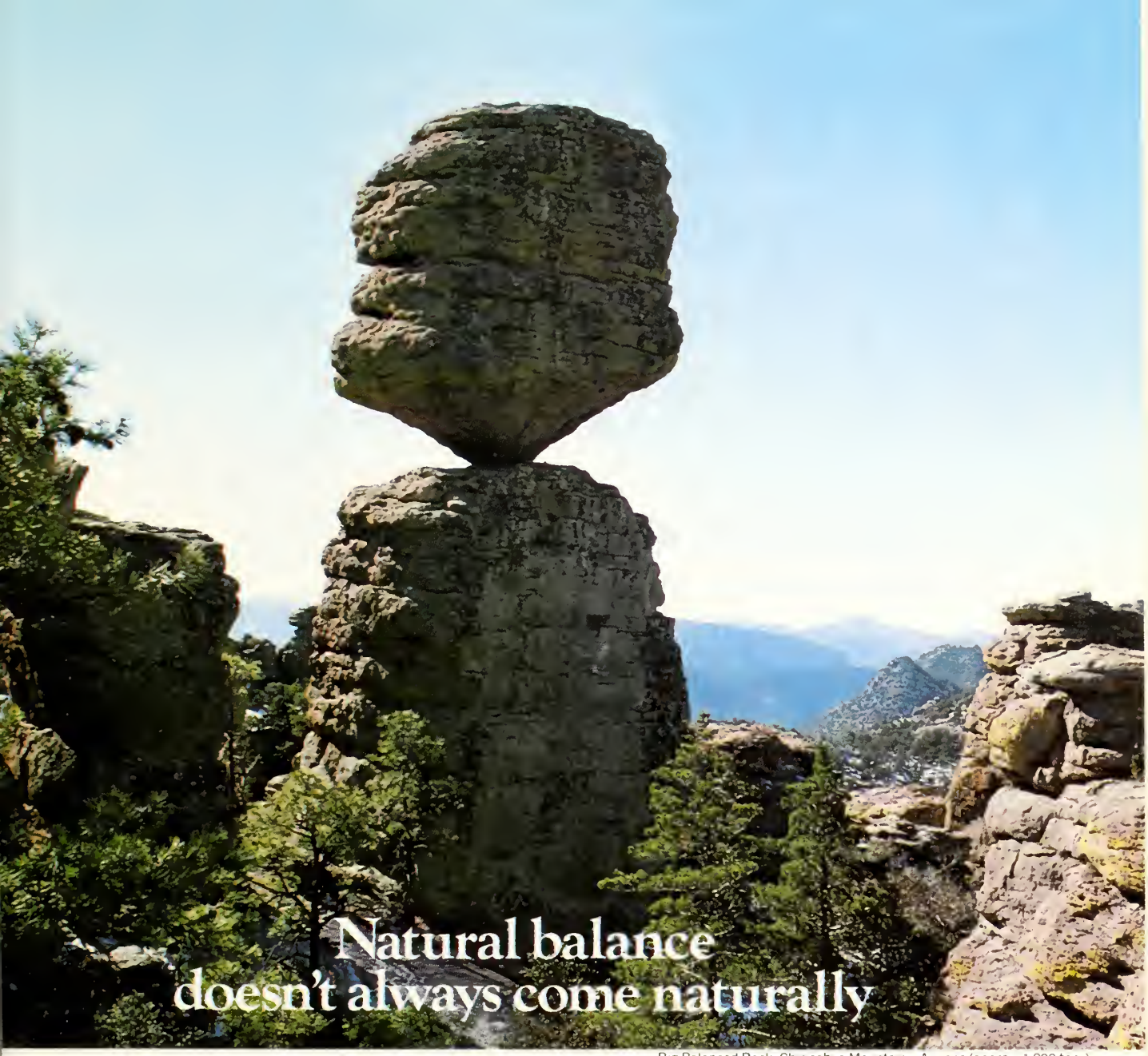
To cope is an intransitive verb. Both Webster and the Oxford Dictionary specify that it is to be used with the preposition **with: to cope with** something. Without the **with** it is an archaic term of combat. Psychiatric usage, however, appears to have returned the obsolete form to more or less respectability. Ed.

It is as if there is fear of going from a comfortable stage of hanging together (feeling/thinking I'm integrated) to an anxiety-provoking level of disintegration with feelings of despair, helplessness, and hopelessness (the feelings associated with depression). To recapitulate: where once I was feeling on top of things, master of the situation, in control, omnipotent (?), now I feel I'm to be overwhelmed by things, by the world I once thought I was on top of. Anxiety intensifies: I expect something drastic is going to happen. I'll be wiped out.

Over the past few years more and more papers have been appearing that deal with stress, coping, and how psychotherapy works: **Persuasion and Healing** by Frank; "the giving up-given up" syndrome of Engel; **That Helpless Feeling — The Dangers of Stress** by Colligan.

Psychotherapies seem to appear in cycles, successful for a while and then replaced by another: isolation therapy (Mitchell), hypnosis (Mesmer), auto-suggestion (Couè), psychoanalysis (Freud), psychobiology (Mey-

(Continued on next page)



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osage for Vertigo* —The usual adult dosage for Antivert/25 ne tablet t.i.d.

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ossibly Effective: Management of vertigo associated with diseases affecting the tibular system.

inal classification of the less than effective indications requires further estigation.

CONTRAINDICATIONS. Administration of Antivert (meclizine HCl) during pregnancy or to women who may become pregnant is contraindicated in view of the teratogenic effect of the drug in rats.

The administration of meclizine to pregnant rats during the 12-15 day of gestation has produced cleft palate in the offspring. Limited studies using doses of over 100 mg./kg./day in rabbits and 10 mg./kg./day in pigs and monkeys did not show cleft palate. Congeners of meclizine have caused cleft palate in species other than the rat.

Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

WARNINGS. Since drowsiness may, on occasion, occur with use of this drug, patients should be warned of this possibility and cautioned against driving a car or operating dangerous machinery.

Usage in Children. Clinical studies establishing safety and effectiveness in children have not been done, therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy. See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

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* **Indications:** When the combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome, Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium sparing action of triamterene is warranted. Routine use of diuretics in healthy pregnant women is inappropriate; they are indicated in pregnancy only when edema is due to pathological causes (see Warnings).

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K+ frequently; both can cause K+ retention and elevated serum K+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazide alone.

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"COPING"

(Continued from page 310)

er), transactional analysis (Sullivan, Berne), behavior therapy (Pavlov, Watson, Skinner), transcendental meditation (Zen Buddhism), biofeedback, group therapies and a large number of passing fads and fancies. Each time it is as if one, or a combination of these, has the magical power (charisma) to restore or develop in an individual a sense of mastery (competence, self-confidence) especially if the therapist (practitioner) believes (has faith) in it too. This pheneomenon may also be associated with a prestigious institution, a spa, a guru, a shrine, a god or gods. (Faith in a god has been the only consistent one in all civilizations — at least until World War II and the occurrence of the theme, "God is dead.") Any or all of the foregoing support and maintain some people; "the power" is on their side. Thus, the success of some unscientific or pseudo-scientific quackeries and fads (as well as more valid therapies) also occurs at varying times and for varying lengths of time.

Ideally the goal of successful therapy is for the individual, able to cope again, less threatened by outside factors, to become detached and independent of the provider of therapy and even of the particular type of therapy. The danger in any of the therapies is that the sense of coping remains dependent on the provider and his system and that a mature form of separation from the source of trust (faith) is not developed or restored while the dread of despair and helplessness continues to haunt one's sense of identity.

The whole problem of coping, of mastery and control, does seem to recapitulate certain phenomena of childhood growth and development, e.g., when the infant moves from dependency, omnipotence, and basic trust into and through the period of needing to continue to control (manipulate) the outside using passivity and aggressivity, mobility and immobility, and all kinds of wishes. It is only after the relatively successful working-through of these two stages that the person can come to a comfortable reliance (trust) on "oneness with himself," a sense of inner mastery, detached from the initial supportive, nutritive figure (usually the mother and, in therapy, the therapist). This kind of coping, producing in the subject an inner tranquility, equanimity, and poise, is quite different from the coping that is a drive to master the outside, to make the outside and others change while he remains the same.

Joseph M. Zucker, M.D.



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APUDOMAS: A PRIMER

Apud cells, first described in 1968, derive their name from the initial letters of their first three, and most important properties: 1. a high content of Amine, 2. the capacity for amine Presursor Uptake, and 3. the presence of amino acid Decarboxylase for the conversion of the amino acid precursors to amines. Under electron microscopy apud cells exhibit ultrastructural characteristics similar to those of other polypeptide-secreting cells. The polypeptide products of apud cells can be displayed by immunological techniques, namely immunofluorescence and labeling with peroxidase. Tumors of these cells have been designated as apudomas.

The apud cells belong to one of three groups: 1. **central**, 2. **general** and 3. **alimentary**. Some secrete polypeptides only, some amines only, and others both. Some cell products are identifiable as hormones (ACTH, gastrin, and epinephrine), while others have not yet been so identified (gastric inhibitory polypeptide, or GIP, and stomastatin). Vasoactive intestinal polypeptide (VIP) has no known normal physiological function, but is identified with the watery diarrhea syndrome (WDHA for **W**atery **D**iarrhea, **H**ypokalemia, and hypo- or **A**chlorhydria).

Some polypeptide-secreting cells are not apud in character, Parathyroid cells, for example, are not apud cells, but are closely related. The cells of the anterior pituitary which secrete glycoproteins — thyroid stimulating hormone (TSH), follicle stimulating hormone (FSH), and luteinizing hormone (LH) — and the endocrine cells of the kidney and placenta, however, are probably unrelated.

The relationship of apud cells and apudomas to each other and to the body as a whole has recently been elucidated. The following observations suggest that the cells have a common embryological origin: 1. apud cells share the same basic cytochemical characteristics, 2. apudomas of different organs share the same secretory versatility, and 3. several glands in the same person may develop apudomas. Pearse suggested that the neural crest be considered as the cell origin source. The neural crest cells have apud characteristics and are in fact the precursors of many apud cells.

If all apud cells originated from the neural crest, it could follow that paraendocrine apudomas (ie, apudomas which secrete substances characteristic of other endocrine glands) are manifesting the primitive secretory potential of the neural crest, while multiple endocrine adenopathies represent widespread dysplasias of the apud system. It is necessary, however, to revert further in the developmental progression to explain some of the discrepancies, e.g. involvement of the parathyroid gland and hormone in the multigland complexes. The parathyroid is not an apud gland.

The **epiblast**, which is the ectoderm, develops into the 1. **neuroectoderm** which forms the hypothalmus and pineal body; 2. **separate placodes** (thick plates of ectoderm) to form the pituitary and parathyroids; and 3. the **neural crest**, which forms the thyroid C cells (calcitonin), the adrenal medulla, the carotid body, the sympathetic ganglia, and the melanocytes. The source of the alimentary apud cells is uncertain.

Apudomas may be classified into three main groups:

1. **Orthoendocrine** — A. Tumors secreting polypeptides normal to their cells of origin (insulinoma; pancreatic plucagonoma, producing a syndrome consisting of diabetes and a characteristic rash; G cell antral gastrinoma with Zollinger-Ellison syndrome; anterior pituitary tumor secreting ACTH, MSH, growth hormone, and prolactin; calcitoninoma, i.e. medullary carcinoma of the thyroid. B. Tumors secreting amines normal to their cells of origin (carcinoid tumor, pheochromocytoma, neuroblastoma, and gaglioneuroma).

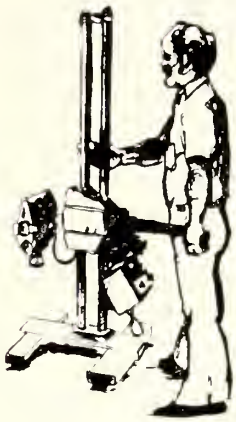
2. **Paraendocrine** — A. Tumors of endo-

(Continued on page 314)

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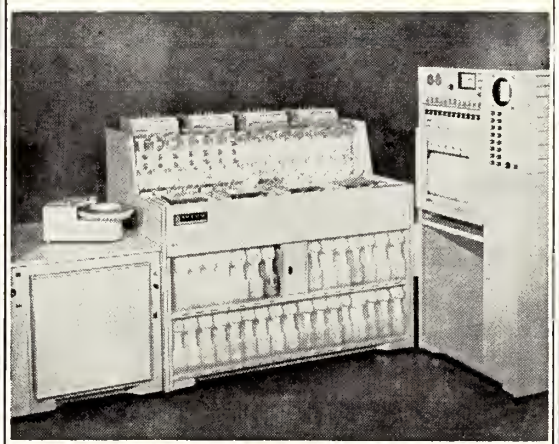
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APUDOMAS: A PRIMER

(Continued from page 312)

crine glands secreting hormones or hormonal agents characteristic of other glands or cells (**Cushing's syndrome**, or ectopic ACTH from carcinoids, epithelial carcinoma or the thymus, islet cell tumor of the pancreas pheochromocytoma, and ovarian carcinoma; **Zollinger-Ellison syndrome** or gastrinoma, from pancreatic islet cell adenoma or carcinoma, or similar tumor in the duodenum; **WDHA Syndrome**, pancreatic cholera or VIPoma from non-beta cell tumor of the pancreas). B. Tumors of organs or tissues not usually endocrine in nature, secreting hormones or homonal agents (Cushings syndrome, or ectopic ACTH, from oat cell carcinoma of the bronchus).

3. **Multiple Endocrine Adenopathy** (MEA) in which more than one endocrine gland in the same individual is the site of neoplasia, often an apudoma, which may be orthoendocrine or paraendocrine:

Type I MEA (MEA I): The parathyroids are most frequently involved (90 per cent), usually with chief cell hyperplasia and ensuing hyperparathyroidism; pancreatic islet cells in 80 per cent of cases, with Zollinger-Ellison syndrome; hyperinsulinism, or WDHA in that order of frequency; and anterior pituitary in 65 per cent, causing space-occupying features of pituitary tumor, acromegaly, or rarely Cushing's syndrome. Adrenal hyperplasia probably secondary to the ACTH is sometimes present, and at times carcinoid tumors.

Type II MEA (MEA II): This complex (Sipple's syndrome) is characterized by the presence of a medullary carcinoma of the thyroid (calcitonin) in association with pheochromocytoma, hyperparathyroidism, and other lesions, including subcutaneous and submucous fibromas and hyperplasia of melanocytes. This syndrome may be regarded as an apud cell dysplasia.

According to Welbourne, an associate of Pearse and author of the unifying theory: "All the apud cells . . . listed have A,P,U, and D characteristics, except the parathy-

(Continued on page 316)

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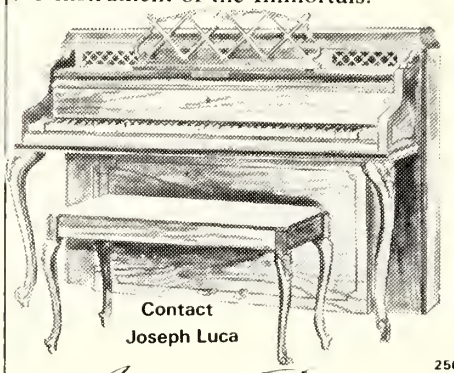
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APUDOMAS: A PRIMER

(Continued from page 314)

roids whose origin is similar to that of the pituitary, and they are related closely in other ways to the apud cells. For the moment we may regard all these groups as one large family with several branches. Some are related very closely, like brothers and sisters, while others are related less closely, like cousins. The term apud, which was originally a description of cytochemical features of certain cells, can perhaps be extended, by the insertion of quotation marks ('apud'), to describe a larger family of neuroendocrine cells, all of whose relations are not yet clearly defined."

His checklist of clues to the diagnosis of apudomas arising from or affecting the gut is useful:

CLINICAL STATE	POSSIBLE APUDOMA
Peptic ulcer disease	Parathyroid adenoma or hyperplasia Gastrinoma
Diarrhea	Carcinoid tumor VIPoma Gastrinoma Medullary carcinoma
Constipation	Parathyroid adenoma or hyperplasia Enteroglucagonoma
Hypoglycemia	Insulinoma
Hyperglycemia	Glucagonoma Enteroglucagonoma Gastrinoma Corticotrophinoma Pheochromocytoma
Hypokalemia Acidosis Alkalosis	VIPoma Ectopic corticotrophinoma
Migratory dermatitis	Glucagonoma

Welbourne suggests "that many apparently unrelated endocrine lesions can be classed together as apudomas and that doing so provides a convenient unifying concept, which increases our understanding and may, in the course of time, lead to more effective methods of diagnosis and treatment."

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I am especially interested in time lapse between sting and death although information concerning the following would be helpful: (1) time sequence of symptoms, (2) previous reactions to insect stings, (3) medication on hand at time of sting, (4) type of medication, (5) type of insect, (6) number of stings, and (7) estimation as to whether or not a physician or hospital emergency room could have been reached in time to avoid a fatal outcome.

If your readers know of any such cases, I would appreciate hearing from them.

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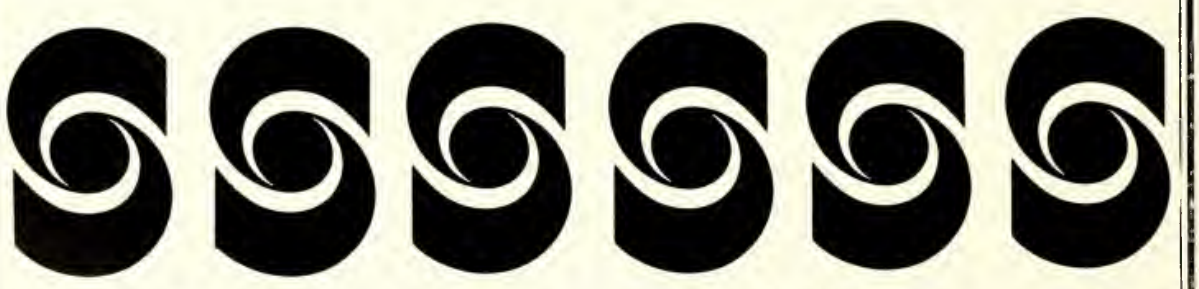
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(Continued from page 292)

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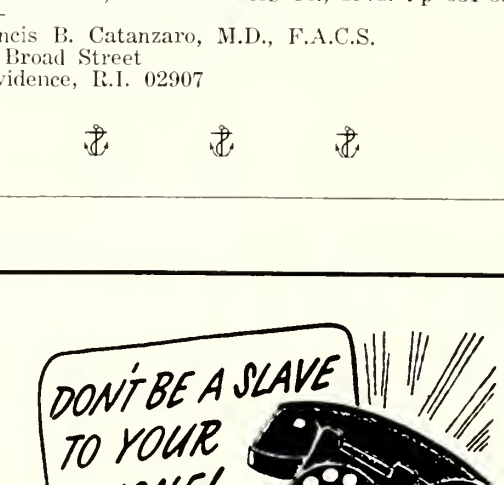
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ANTICHOLINERGIC TOXICITY

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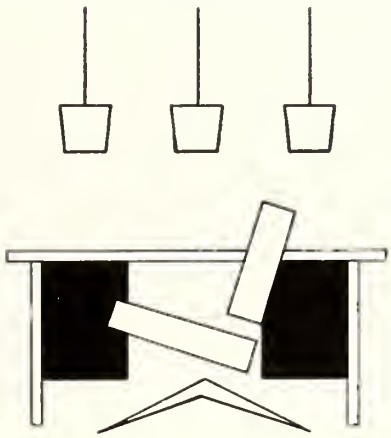
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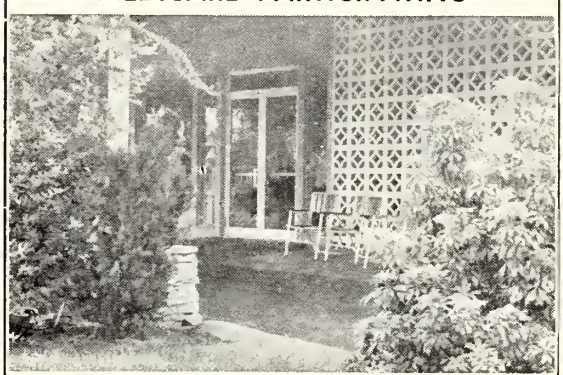
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ANTICHOLINERGIC TOXICITY

(Continued from page 322)

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CHRONIC ATRIAL FIBRILLATION

(Continued from page 299)

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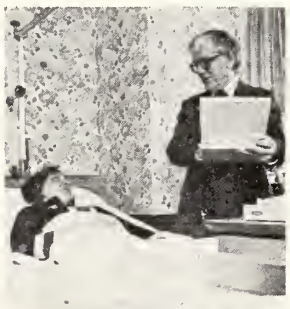
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PRIMARY ALDOSTERONISM

(Continued from page 305)

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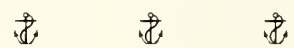
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ONE SENTENCE ESSAY

He who marries for money, Earns it.

. . . from a Chinese fortune cookie

Rhode Island Medical Journal

July, 1977 Vol. 60, No. 7



In Memoriam

Francesco Ronchese, 1892-1976

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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported, should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

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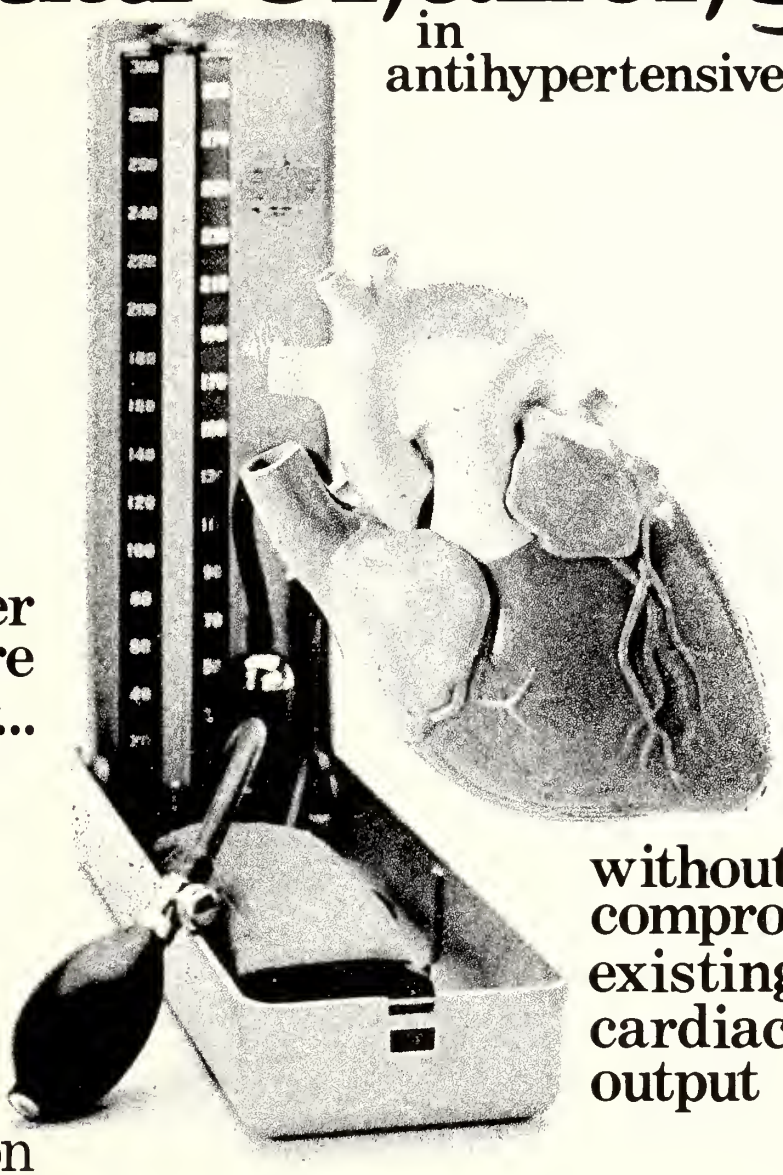
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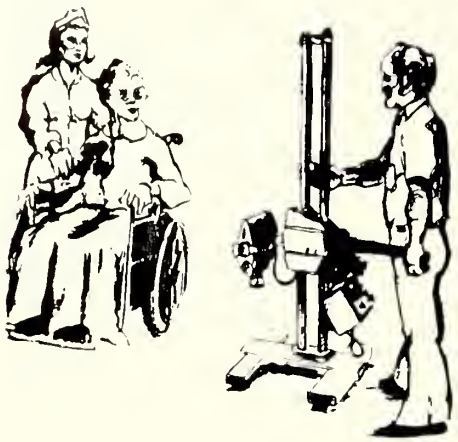
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MELVIN HOFFMAN, M.D., recently received an award for Outstanding Service at the American Heart Association New England Regional Meeting. Doctor Hoffman serves as a member of the National Committee of the American Heart Association.

* * *

D. ROBERT FOWLER, M.D., participated in a Symposium on "Quality of Care Assessment in the Problem-Oriented System" at the VI World Congress of Psychiatry in Honolulu, Hawaii.

* * *

ARTHUR C. GAUDREAU, M.D., director of the Obstetrical Department of Woonsocket Hospital, has been elected to the board of trustees of the hospital.

* * *

MARY LEKAS, M.D. (Mrs. Harold W. Picozzi) has received an active fellowship in The American Laryngological, Rhinological, and Otological Society (or "The Triological Society") upon the completion of a thesis. Dr. Lekas is the only woman on the eastern coast who has achieved this distinction.

* * *

SANFORD C. SPRARAGEN, M.D., Director of the Department of Nuclear Medicine, has recently been appointed by the Director of Health, Rhode Island Repartment of Health, to serve on the State Radiation Advisory Commission.

* * *

ANACLETO BERRILLO, M.D., was recently presented with the first annual award for distinguished service by the St. Joseph's Hospital's medical staff at their annual dinner dance at the Alpine Club.

* * *

IRVING A. BECK, M.D., was elected a Vice-President of the American Osler Society at its annual meeting at the Mayo Foundation in May. Dr. Beck will assume the Presidency in 1979.

* * *

STEPHEN J. RICHMAN, M.D., has recently been elected a Fellow of the American Academy of Ophthalmology and Otorhinolaryngology.

* * *

EDWARD CARDILLO, M.D., has been reelected president of the medical staff association at Women & Infants Hospital of Rhode Island.

* * *

J. D. KEITH PALMER, M.D., Director of Physical and Rehabilitative Medicine at The Miriam Hospital, was recently appointed as a Consultant to the National Center for Health Services Research.

* * *

CHARLES E. MILLARD, M.D., has been unanimously voted by the membership of the Rhode Island Chapter of the American Academy of Family Physicians as the "Outstanding Family Physician in the State of Rhode Island." This is the first time such an award has been made.

* * *

JOHN YASHAR, M.D., has been elected to membership in the New England Society for Vascular Surgery.

* * *

JOHN C. BAXTER, M.D., a member of Woonsocket Hospital's Medical Staff since 1973, has been appointed President of the Medical Staff.

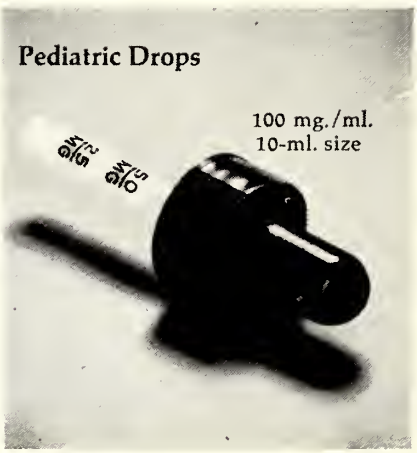
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Francesco Ronchese: In Memoriam



Approximately one year ago, on March 25, 1976, Francesco Ronchese died. Those who were fortunate enough to have known him were privileged. Those who had known him intimately, as we had for about 30 years, were recipients of a rare gift, which shall always be treasured.

Born in Treviso, Italy on October 22, 1892, a son of the late Angelo and Eleanor Ronchese, he was graduated from the University of Padua, Italy in 1917. This was followed by graduate work in Venice and Paris. He finally

(Continued on next page)

settled in Providence in 1928, where he opened his office for the treatment of diseases of the skin. He continued in practice until the onset of his terminal illness.

In 1943 Francesco joined the Department of Dermatology of Boston University School of Medicine on a voluntary part-time basis, retiring in 1957 as Clinical Professor of Dermatology, Emeritus. He served as Chief of Dermatology at Rhode Island Hospital from 1946 to 1954 and was a founding member and first president of the Rhode Island Dermatological Society. For many years he was an active member of the New England Dermatological Society. This organization, in recognition of his major contributions to dermatology, gave him a unique honor in 1969, an Award of Excellence.

Francesco's greatest renown professionally, which was world-wide, undoubtedly was due to his contributions to the medical literature. His first article, in 1922, was followed by a steady stream of publications, totalling 183, the last appearing in March 1976. One of his outstanding works was the textbook published in 1948, titled **Occupational Marks and Other Signs As An Aid to Personal Identification.** Not only was he a prolific writer, but also an excellent photographer. As a result, scores of textbooks and other publications have photographs borrowed from his collection.

Doctor Ronchese played an active role with the Rhode Island Medical Journal in arranging for publication of the **Dermaquiz,** which appeared regularly. As a result of his vast experience and extensive collection of photographs this was an interesting and instructive feature which he carried on single-handedly, for many years.

He was a member of the Library Committee of the Rhode Island Medical Society from 1967 until the time of his death. He not only played an active roll on this committee, but also contributed many valuable books and journals to the library from his own collection.

Everything in this tribute written thus far gives no indication, however, of what the real Francesco Ronchese was like. What first comes to mind was his gentle nature. In all the years we knew him he never spoke ill of anyone. In fact, it was his concern for others that was his outstanding trait. Although he was an avid reader, it appeared as if he read more for the benefit of his friends than for himself. Knowing of the interest of one of us in art, he would periodically deliver a package of clippings relating to this pursuit. One of us received articles on Israel and on coin collecting. All of his friends were recipients of similar love packages.

Both authors, before settling in Providence consulted Francesco. He was one of New England's leading dermatologists, yet he took the time to meet with us, and in both instances unhesitatingly stated that there was plenty of room for all. He not only gave his advice, but followed it with a steady referral of patients to make our early years so much easier. He showed the same consideration to most of the dermatologists who subsequently opened offices in our state.

Rhode Island can indeed be proud of Francesco Ronchese. His position as dermatologic leader of this century is undeniable. The greatness of Francesco Ronchese as a human being can best be summed up by saying that he was truly a gentleman in the Judeo-Christian sense of the word. A man who could do no evil, he could see only the best in others. Most discerning was a comment made by one of the six honorary pall-bearers following the Catholic Mass of Christian burial on March 27, 1977: "Francesco must be smiling now as he sees that his pall-bearers are one Catholic, three Protestants, and two Jews."

Francesco Ronchese will be missed by his specialty group for his brilliant mind and major contributions and by the Rhode Island Medical Society for his work on the Library Committee and contributions to the medical journal. He will be missed even more by those who knew and loved him as a man.

Arthur B. Kern, M.D.
Bencel L. Schiff, M.D.

A Jocular Poem On Syphilis

Seventeenth Century Italian Poem Warns Of The Dangers Of The French Disease

By Francesco Ronchese, M.D.

In 1629 a zany Italian poet published a poem on syphilis. Giovanni Battista Lalli was born in 1572 and died in 1637. Lalli makes no mystery of the foolishness of his poetry. He calls it silly, chatter to fight the heat, to kill time — and I think everybody agrees with him. It has been called infelix operis summa. The poem is made of 3,410 verses, grouped in 485 octets.

"The French disease is like a hydra. A head is cut, a thousand spring out. Venus coaxes warrior friends to go to America to fetch the guyaco wood. Juno tries to stop the trip by witches' incantations which lock the warriors into a jail."

Lalli ends his poem in this way: "I jested about this infernal disease to make people aware of it, and if my pottage was insipid it is the poet's fault. Take my poetry for its value. It was made for good and my pleasure. Good night because it is late, and keep away from the French disease."

Doctor Ronchese died on March 25, 1976. This is one of several manuscripts which he submitted for publication prior to his death.

FRANCESCO RONCHESE, M.D., *Clinical Professor of Dermatology, Emeritus, Boston University, Former Chief of Dermatology, Rhode Island Hospital.*

EXCERPTS:

ARGOMENTO.

Punta Giunon d'inuidioſo ſdegno,
Di Vener contro i ſudditi s'accende,
E di contaminar l'impreſa prende,
Col mal Franceſce, il ſuo laſciuo regno.

(Translation: THE SUBJECT Juno, envious of Venus, decides to spread the French disease among Venus's subjects.)

O naſo nobiliſſimo, e qual ronca
Hauuto ha tanto ardir di darti il taglio!
Quai mano si crudel recide, e tronca
De i ſoſpiri d'Amor l'alto ſpiraglio?
Ahi di bel campanil fiera ſpelonca
T'ha reſo al mondo si crudele intaglio.
A diſtinguere homai non ſei diſpoſto
L'odor de la cloaca, e de l'arroſto.

(Translation: The disease was first believed to be scabbies. It destroys the nose so badly that the affected ones end by being unable to distinguish between the smell of a sewer and the flavor of a steak.)

A qual crudo ſeruaggio ci deſtina
Vener noſtra Reina, anzi ruina?

(Translation: Venus is your Queen [Reina in Lalli's poetic Italian]. Reina is translated in Italian as Ruin.)

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Gingivomegaly

A Case of Rare Disorder — Otherwise Known As Macrogingivae, Idiopathic Gingival Fibromatosis, Hereditary Gingival Fibromatosis, Hippopotamus Mouth, Or Cherubism — Is Reported And A New Name For It Is Suggested

By Francesco Ronchese, M.D.

About a hundred cases of this curious anomaly have been reported[1], and variously named with reference to the size of the gums and the filling of the mouth, causing potato-in-the-mouth speech and hippopotamus facies.[2]

Because there is no increase in the size of the bones, but only of the gingivae, I feel I can offer one more term, viz. gingivomegaly, analogous to dermatomegaly[3], which describes a skin larger than the body it covers, a condition commonly called cutis laxa.

Doctor Ronchese died on March 25, 1976. This is one of several manuscripts which he submitted for publication prior to his leath.

FRANCESCO RONCHESE, M.D., *Clinical Professor of Dermatology, Emeritus, Boston University, Former Chief of Dermatology, Rhode Island Hospital.*

CASE REPORT

A 13-year old boy was referred by the Child Development Center of the Rhode Island Hospital in 1967. He presented with gums greatly increased in size, the hypertrophic gingival tissue covering most of the crowns of his teeth. There was no history of intake of drugs.

This disorder caused a speech defect and was a source of embarassment. The boy showed marked signs of reading and language difficulty. Laboratory findings: total serum proteins normal, but albumin 70 percent. Chromosomal analysis was normal except for one cell. VDRL was negative. X-ray studies showed no enlargement or pathology of bones. Blood count and differential were normal.

In Thomas's **Oral Surgery** (1969, p. 647, figs. 45-47) a child with cherubism-hippopotamus mouth is shown.



Fig. 1. Hypertrophic gingivae in a 13 year old boy.

SUMMARY

A case is reported of idopathis gingival fibromatosis causing hippopotamus mouth and speech difficulty. A new suggested term for this anomaly is gingivomegaly.

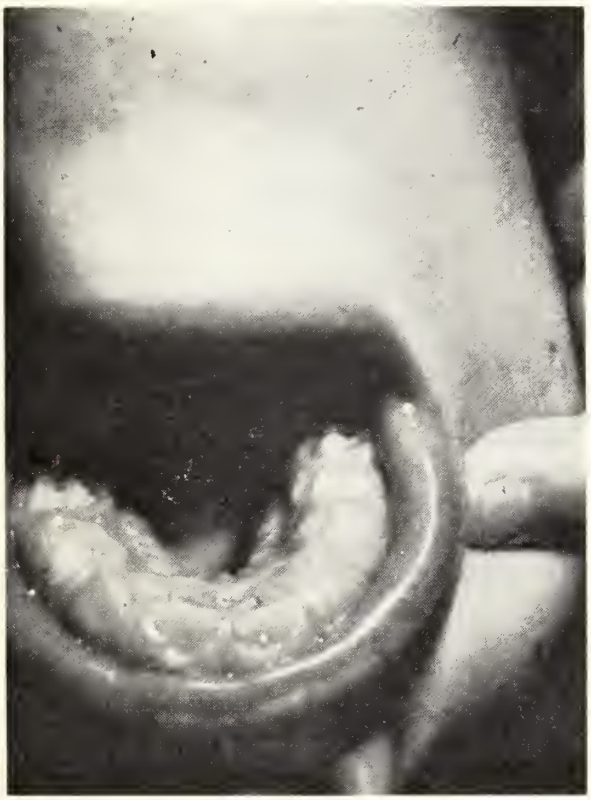


Fig. 2. Hypertrophic gingivae and hippopotamus mouth in a 13 year old boy.

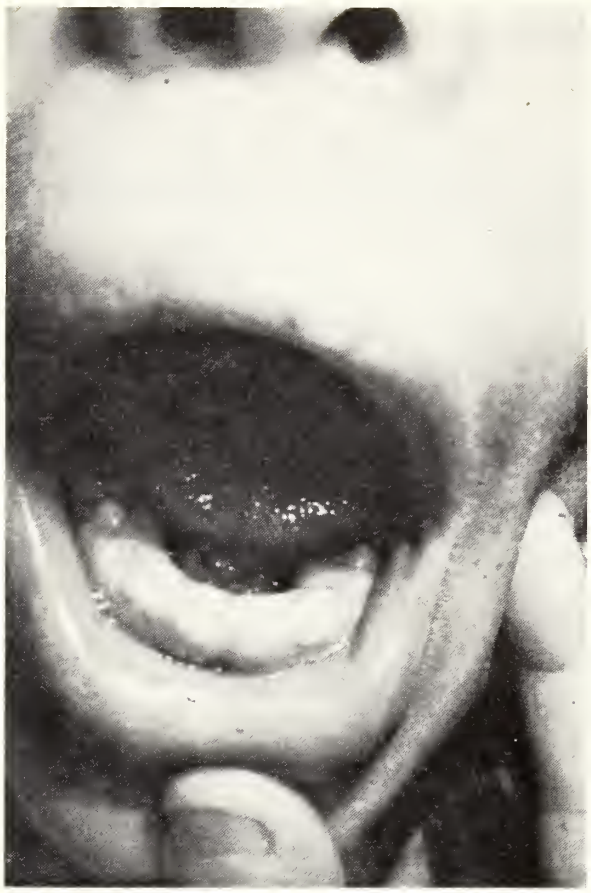


Fig. 3. Hypertrophic gingivae in a 13 year old boy.

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Balzac, Trichologist

White Scalp Hair And Black Eyebrows Were First Described By Famed French Novelist

By Francesco Ronchese, M.D.

In **La Cousine Bette** dermatologist Honoré de Balzac tells of a courtesan passing to her friend a deadly Brazilian skin disease, which ate away the skin of the face, causing hair, teeth, and nails to fall out, and puzzling eight consultants, after leprosy and syphilis were discarded.

Another courtesan (LaRabouilleuse) is described in her last days as cadaveric, with eyelids as thin as the vitelline membrane of the egg — and having no scalp hair.

Trichologist Balzac dedicated an entire volume to César Birotteau and his hair tonics. In **Histoire des Treiza,** he mentions a disease transmitted by the hair. In **L'Envers de l'histoire contemporaine,** he described a case of matted hair (with no pediculi) diagnosed as plica polonica and treated by shaving the head.

Where Balzac showed his genius was in reporting the difference in color of senile hair, the first and the last, as far as I know, to make such an observation, whether in fiction or in a scientific publication.

Septuagenarian Baron Hulot was asked by his paramour to stop dyeing his hair, and he did. One day he appeared with snow white hair. "However, the eyebrows remained black . . . to remind him of his past handsomeness . . . . They looked like fragments of fine sculpture in dilapidated castles . . . or as the moss on Roman ruins . . . they reminded him of his past glories . . . " **(La Cousine Bette)** (see Fig. 1).

In 1971[1] I wrote a note on this strange phenomenon commonly seen on television, magazine covers (see Fig. 2), postage stamps — and myself. Uncommon (because of shaving) are white mustaches and black hair, as sported by the late famous conductor Pierre Monteux. He had a hard time to convince inquirers that his hair were not dyed. Cavalieri[2] reproduced my illustration, added a case of his own, and discussed the genetics of the phenomenon.

The difference in color between scalp and eyebrows, more or less conspicuous, can be

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FRANCESCO RONCHESE, M.D., *Clinical Professor of Dermatology, Emeritus, Boston University, Former Chief of Dermatology, Rhode Island Hospital.*

seen frequently in newspapers and magazine pictures, in paintings, on postage stamps and on television, both in males and females over 60 years of age. An excuse for not paying attention to it may be the wide use of heavy dark eyeglass frames covering most of the eyebrow area, eyebrow trimming, plucking and penciling, shaving, and dyeing.

SUMMARY

White scalp hair and black eyebrows were "discovered" by Balzac in 1846.

They seem to be a characteristic of late middle age or of senility. Similarly characteristic are a black scalp and white mustache, a black scalp and a white beard, or vice versa.

These hair color peculiarities, apparently, were not described before Balzac or after, either in fictional or scientific observation.

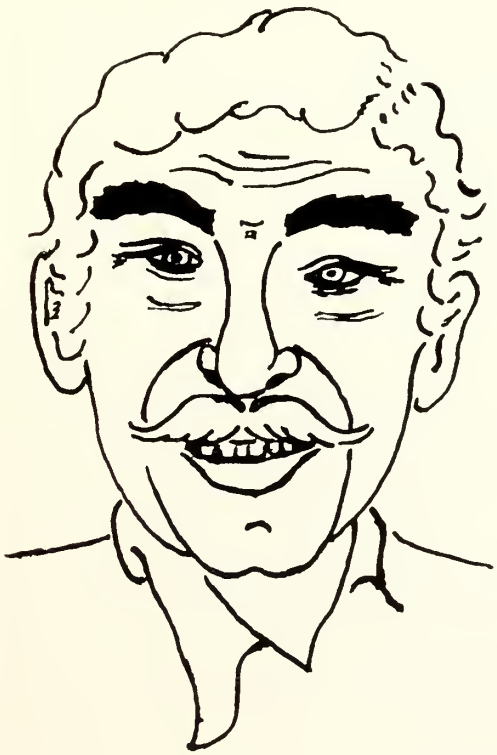


Figure 1
Baron Hulot (La Cousine Bette) stopped dyeing his hair and one morning they appeared snow white. The eyebrows stayed black.



Figure 2
The phenomenon can be commonly seen on television and in print, as in this Time cover, reproduced with the kind permission of Time, Inc.

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Rising Health Care Costs: Another Perspective

The Health Care Crisis Is Neither A Medical Care Crisis, Nor Attributable To Physicians' Incomes

By Timothy B. Norbeck

It's a fact that the national health bill in the United States during fiscal 1976 was $139.3 billion, 14 per cent higher than the $118.5 billion recorded in fiscal 1975. From these figures government bureaucrats, publicity seeking politicians, and other captious and biased critics have concluded that Americans are not getting enough for their health care dollar and, furthermore, that physicians' income is a primary component in the cost increase. The fault-finders combine specious reasoning with a skillful, but nevertheless fallacious, representation of statistics in their unceasing efforts to discredit the medical profession. These critics point to the Consumer Price Index (CPI) and health cost comparisons over the past ten years to back up their unfair and inaccurate contention that physicians bear the responsibility and blame for this escalation. During 1975 medical costs increased 12.3 per cent compared with a 9.1 per cent increase in the overall CPI. Since the Gross National Product (GNP) grew at a lower rate than usual, health care spending reached an all time high of 8.3 per cent of the GNP[1].

Such figures are used by the critics as **prima facie** evidence of physician abuse and overutilization of services. A favorite technique is to compare the CPI figures for medical services with those for the economy as a whole in order to "prove" that health care costs have risen faster than the CPI. It is important to recognize that the CPI measures changes in the prices of selected goods and services bought by wage earners, but does not provide for fluctuations in prices that occur because of changes in the quality of goods and services. The CPI does not measure the total spectrum of living costs and omits important cost of living expenditures such as income taxes and social security taxes.[2]

Furthermore, almost all services pertaining to everyday living are up higher than medical care prices. For example, in 1975 medical care was at 184.7 on the Consumer Price Index (1967=100). The cost of having a room painted was at 225.6, a house roof reshingled 233.4, a furnace repaired 207.1. Automobile repairs were at 189.7, postal charges at 222.3, and insurance and finance were at 196.6. Incidentally, lawyers' charges were at 199.9 on the 1976 CPI[3]!

PHYSICIANS' FEES

The CPI indicates that over the past five years the component for medical care has risen 39.8 per cent, with physician fees increasing 39.5 per cent, only slightly more than the 38.6 per cent rise for all items[4]. Physicians' incomes have generated a great deal of publicity and comment from the critics. In 1974 the average physician netted from

(Continued on next page)

TIMOTHY B. NORBECK, *Executive Director, Rhode Island Medical Society*

his practice $51,224 (after business expenses). Since this is an average figure, it follows that many physicians earn less, many appreciably less. The gross receipts of the average physician totaled $86,575, while his business expenses totaled $35,351.[5] Salaries of business executives vary according to the individual's level of responsibility within the corporate structure. The average physician nets about the equivalent of the mid-range level of corporate executives and well below the corporate officer scale.[6] One must recognize also that the business executive receives extensive fringe benefits over and above his salary, whereas a typical self-employed physician must purchase such benefits from after-business-expense earnings. Considering the lengthy hours that most physicians work combined with the type of responsibilities they bear, it is difficult to understand or justify the criticism over their income status. A tennis player in one match can exceed a physician's yearly income. A NHL hockey and an NBA basketball player average $90,000 and $105,000 respectively. A .276 hitter has been known to command as much as $150,000 for signing a one year baseball contract. In spite of galloping inflation, such statistics raise questions about our perspectives and values.

Physicians' fees have been rising rapidly but not in proportion to their business expenses. Nor has their income per patient visit risen commensurate with the cost of living. During most of the 1971-1974 period, increases in doctor's fees were tightly curbed by government-imposed price controls. During that period, doctors' business costs rose by approximately 18.5 per cent, while fees increased 16.3 per cent. Physicians' income per patient visit climbed 14.7 per cent over the same time span, while the overall cost of living increased by 21.8 per cent. During 1975, the year after fee controls were removed, doctors' overall business expenses escalated 12.3 per cent. The largest component in this increase was malpractice insurance, which rose 84 per cent in cost. Since physicians' fees went up 12.3 per cent in 1975, it follows that many doctors simply increased their fees according to their business costs. Thus it appears that physicians' fees have risen neither in proportion to expenses nor to the rise in the cost of living.[7]

Rapidly escalating malpractice insurance premiums have undoubtedly contributed to higher health care costs in other ways as well. It is estimated that increasing medical malpractice lawsuits have added as much as $1.5 billion a year to the public's bill for health insurance.[8] "Defensive medicine," defined as x-ray studies, laboratory tests, and other procedures not medically indicated but ordered to protect against litigation, is believed to cost the system some $3 to $5 billion per year.[9] It is almost impossible to estimate the amount of these unnecessary expenses which result from the ever-present threat of malpractice action in a suit-conscious society. A recent American Medical Association poll[10] indicated that three out of four American physicians are practicing "defensive medicine" as a protection against potential malpractice suits.

The CPI takes no account of the significant improvements in the quality of care resulting from new technology and the more sophisticated treatments for disease. It also fails to allow for the increased demand for services and improved accessibility of these services.

NEW TECHNOLOGY

What is the effect of new technology and accessibility? Generally speaking, a great deal of the concern which we all share over the increases in health care costs can be attributed directly to the unprecedented success of medicine over the past several years and the accompanying developments in new technology. Chronically ill people live more comfortably, the elderly live longer, and the seriously injured are kept alive and returned to normal lives, all because of today's more sophisticated, complex, and costly equipment.

In 1973 Congress legislated full Medicare coverage for people suffering from kidney failure. Modern hemodialysis ranks with medicine's great life-prolonging technological advances, but cost the United States $450 million during fiscal 1976.[11] Such costs are expected to rise to $1 billion by 1980 as many more people will receive treatment and enjoy longer and fuller lives. Is this program too costly? Should it be cut back? Just ask one of the recipients or a member of his or her family?

Hyperbaric chambers cost millions of dollars and undoubtedly save lives, but the cost per life saved is very high. Too high? Ask someone who is living today because of it.

Medical innovations in recent years have often involved diagnostic and therapeutic techniques requiring hospitalization and sophisticated equipment. Among these are chemotherapy, renal dialysis, open heart surgery, organ transplants, burns and trauma, and brain and body scanners.[12] The use of intensive care and coronary care units for treating heart attack victims is only one example of a costly but important improvement in medical technology. In 1960 only 11 per cent of private nonprofit hospitals had intensive care units, while by 1973 the proportion had increased to 71 per cent. Not surprisingly this has had a dramatic effect on the cost of treating heart attacks, rising from $1,449 per case in 1964 to $3,280 per case in 1971, an increase of 126 per cent, or 12 per cent compounded per year.[12] Certainly heart care has improved, but are the advances commensurate with the costs? Such a question many bring a variety of answers, but one thing is certain — recipients of these life saving innovations (and their families) have no doubt that they were well worth the cost.

Complicated procedures and treatments once considered miraculous are now commonplace. Decerebrate patients cling to life, and immuno-deficient children are maintained in totally sterile facilities — all at tremendous cost. In February 1977 a 26-year-old man was repairing a four-wheel-drive shaft, and his entire scalp was torn from his head. Thanks to microvascular techniques learned in free-flap skin grafting, his scalp was successfully replanted — but only after six San Francisco surgeons labored for 17 straight hours.[13] I do not know the costs of this extensive operation, but they were doubtless considerable. As incredible as this operation may appear, it is not atypical of the new technology and the medical miracles which are performed daily or are under development. If the public weal is truly paramount, should we place limits on such innovations?

Computerized axial tomography (CAT) is a new child of technology which has saved and will continue to save lives. National Blue Shield estimates that **minimal** use of the CAT scanner to detect brain cancer will increase costs to Blue Shield by $5 to $9 million a year and that CAT scanners already in operation are costing our health care system approximately $120 million annually.[14] Some argue that CAT head scans will not be as costly as estimated because of savings effected due to the anticipated reduction in the use of conventional special radiologic procedures such as arteriography, cerebral pneumography, radionuclide brain scanning, echoencephalography, and conventional skull films, all of which take far more time and cause more discomfort to the patient than does the CAT scanner. It is safe to assume, however, that the CAT scanner will impact the system in higher costs.

It is likely that overall scanning costs will escalate greatly over the years, as the equipment improves in sophistication and the results of body scans become more reliable. Currently the purchase price of CAT scanners ranges from $450,000 to $600,000 and cost $180,000 per year to maintain and operate. Just ask a patient whose previously undetected brain tumor or aneurysm was detected by the CAT scan whether the cost was too high. Proliferation of CAT scanners could impose a heavy cost burden on the system, but who is to determine how many units are too many when the public demands them? Some say there should be one CAT scanner per 500,000 persons, while others have suggested one per 125,000 persons. Will a physician be sued for malpractice if he attempts to save money for his patient or the system by not ordering this test?

ENVIRONMENT

Environmental factors have had an increasingly deleterious effect on the nation's health. This, too, is reflected in rising health care costs. It is a component over which physicians have little control. Occupational health hazards and carcinogens in the environment and in various consumer products have drawn the attention and concern of many national and international health agencies. A March 1976 report by the President's Committee on Mental Retardation estimated that 85-90 per cent

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of the cases of mild retardation were linked to "conditions arising from the environment" and other demographic factors.

While water purification is taken for granted by most of us, the need to take drinking water from contaminated sources has nevertheless caused widespread disease. According to the World Health Organization, as high as 80 per cent of the world's cases of disease are traceable to unclean water.[15] In this country, pure water is no more assured to all than is protection from malnutrition. Improvements in both water quality and nutrition will undoubtedly contribute to our better health and effect a reduction in overall health care expenditures.

It has not been determined how much of our nation's health bill can be charged to environmentally-related diseases. Currently there are some 15,000 chemicals used commercially which enter our environment. Many have never been subjected to testing for toxicity. While such tests are extremely costly, failure to perform them could result in serious problems such as have been attributed to vinyl chloride. Cancers have developed in some workers who had for many years been exposed to its fumes. Environmentally induced or associated diseases may take years to surface. Asbestos, for example, can cause serious health problems years after exposure. In some reported cases, victims have suffered harmful effects as many as 35 years after exposure to the compound. It is frightening to learn that an estimated 5 million American men and women, on a daily basis, breathe in significant amounts of asbestos fibers.[16]

SOCIAL COMPONENTS

The critics who inveigh against the providers of medical care, finding them culpable for rising health care costs, do not carefully research their subject. They fail to differentiate between medical problems and those of a social and environmental nature. There is no question that our social and environmental deficiencies have contributed greatly to health care costs. If we were to rid ourselves of poor sanitation, malnutrition, and water purification problems, our level of health as a nation would rise rapidly. Were we to eradicate slums together with the rats and lead-based paint which still infest them, our health statistics might compare more favorably with those of Sweden, which surmounted these problems. In several studies a strong correlation between higher education levels and good health has been demonstrated. By an unrelenting assault on these social ills the nation would come to enjoy better health and be spared unnecessary medical bills as well. We are morally bound to eliminate such inequities in our system, and stand to gain in other ways by such an investment and commitment to our poor.

AGING

The elderly have had a tremendous impact on health care costs. Their numbers have grown considerably during this century, in large measure due to the excellence of the health care and new technology made available to them. In 1900 in the United States there were 3.1 million persons 65 years of age or older. By 1940 this number had nearly tripled to 9.0 million, and by 1970 had more than doubled again to 20.2 million. The number is rising by about 3 to 4 million every decade and is estimated to reach 29 million by the year 2000.[17] The over-65 population has been growing steadily as a share of the total population, from 6.8 per cent of the population in 1940 to 10.3 per cent in 1974.

The elderly not only require more care than the younger population, but also suffer illness more frequently. They experience more chronic and degenerative diseases that require extended care over long periods of time at substantially increased costs.[18] While persons over 65 represent only 10 per cent of the population, they occupy 33 per cent of the nation's hospital beds and account for 22 per cent of all hospital stays. The elderly also are responsible for 40 per cent of the general medical office visits.[19] Consistent with these statistics, Medicaid figures indicate that the over-65 population is only 24 per cent of the total Medicaid population but accounts for 38 per cent of the expenditures. This is particularly significant in view of the fact that Medicaid costs in this age group represent expenditures **after** Medicare benefits have already been exhausted.[20]

Mandatory retirement imposed on our senior citizens at age 65 serves only to compound the problem. Enforced idleness leads to intol-

erable loneliness and frustration, alcoholism, failing health, and even suicide.[21] In his inaugural address, E. Kash Rose, M.D., President of the California Medical Association, referred to an HEW report which estimated that the cost of dying amounted to approximately 20 per cent of the health care dollar. In this context the cost of dying may be defined as the funds spent for tests and hospitalization on patients who have no hope of recovering. Are such monies wasted? If so, then someone must make that determination. HEW? The physician? Family? The courts?

HOSPITAL COSTS

Any discussion of health care costs must include expenditures on hospital services. Hospitals received $55.4 billion (39.8 per cent) of the $139.3 billion total national health bill in fiscal 1976.

Most critics point to a surplus of beds, which some say costs the system as much as $2 billion per day. The elimination of surplus beds represents a significant potential cost saving. It is postulated that increased numbers of ambulatory surgical facilities could reduce the cost of minor operations by as much as $12 billion a year. Other costs involved in the complex hospital operation will be very difficult to pare down. New federal and state regulations seem to be adding costs to hospital operations rather than achieving economies. Hospital officials have complained that the medical care evaluation component mandated by the PSRO law will add considerable financial burdens to each institution. Others express concern that requirements in PL 93-641* will merely add employees to the hospital payroll.

A hospital representative in Florida reported that the implementation of a certain safety statute cost Florida hospitals some $50 million. As an example of one excessive regulation, he cited a proposed rule which would require all hospital bathrooms to be equipped with a $35 device to prevent electrocution if a patient put his hand into a sink containing water to retrieve an electric shaver.[22] Other regulations imposed on medicine are often equally ludicrous, although perhaps not to a potential victim.

It is helpful when analyzing hospital costs to keep in mind one salient feature in which hospitals differ from industry. The introduction of new technology in industry most often results in a reduction of labor costs and an accompanying, if not commensurate, increase in efficiency. New medical technology, on the other hand, usually requires not only more, but also specially trained staff to operate it. In short, new hospital technology means more costs. People want the best possible health care that money can buy — someone else's money. Blue Cross, Blue Shield, and the numerous private health insurance programs now cover almost 80 per cent of the national health bill compared to the 37 per cent in 1950. Approximately 82 per cent of all hospital bills are paid by some third party, either the government or private insurers.

It is ironical that the greater the degree of success attained by physicians and hospitals in caring for patients, the more active lawmakers have become in writing new regulations for medicine — regulations which may often inhibit and restrict those very successes.

Another cost burden falling upon hospitals comprises the millions of dollars spent because patients cannot be placed in nursing homes or other less expensive facilities and are therefore retained in hospitals. The present insurance system encourages placement of patients in hospitals, the only way in which they can receive reimbursement from third party payors. Pressures brought to bear on physicians by their patients (or relatives) for hospital care are not to be taken lightly.

The length of stay in Northeastern U.S.A. hospitals exceeds that of any other region in the country. Statistics also indicate that the length of stay is greater in large hospitals than in smaller institutions. Larger hospitals tend to be teaching institutions, offer more sophisticated (and costly) services, and tend to receive more difficult cases which require greater patient investigation and longer stays. The Northeastern region of the United States has more large hospitals than any other section of the country, which accounts in large measure for the discrepancy.[23]

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*The National Health Planning and Resources Development Act of 1974.

HEALTH CARE SURVEYS

Clearly, American medical and health care is getting better, but this fact has contributed to rising health care costs. The Robert Wood Johnson Foundation recently reported that there has been a considerable improvement in the past 15 years in key indices such as the availability of physician services. This has largely eliminated the gaps between visits made by rich and poor or white and black citizens. The number of health care providers has greatly expanded, and mortality and morbidity rates and other indicators have reflected the growing trend toward better medical care.[24]

A 25-year mortality survey by the National Center for Health Statistics has confirmed the fact that the country has made great strides in health care. There has been a spectacular decline in death rates from heart disease and stroke. Unfortunately, a corresponding reduction in their incidence has not been recorded. Life-style, discussed elsewhere in this paper, is a probable cause of this apparent paradox. Decreased mortality, without a similar reduction in the incidence of heart disease, has had an adverse impact on health care costs. Obviously, expensive hospital care and costly new technology have helped victims survive what was earlier considered to be almost certain death. The survey also indicated that lung cancer had the largest and most formidable increase in death rate, doubling in men and quadrupling in women since 1950.[25] Life-style once again is a likely cause of this phenomenon which translates into higher health care costs.

COSTS OF BUREAUCRACIES

Perhaps the reason politicians are so preoccupied with the subject of health care costs is that they feel the need of diverting attention from rising taxes and the rapidly proliferating bureaucracy. The federal budget for Fiscal Year 1976 is approximately $367 billion compared to a mere $10 billion in 1940. It took the United States 185 years to reach an annual federal spending level of $100 billion and only another nine years to double that figure. A $300 billion spending level was "achieved" in but four years after that!

In 1975 to meet expenses the federal government had to collect on the average of $1,750 from every person, or $7,000 for the average family of four. By comparison in 1940 the tax was $77 per person, or $308 for a family of four.

Between 1789 and 1974 the population of the United States multiplied 60 times. During that same period the bureaucracy multiplied 8,170 times. In 1930 one of every 204 people was employed by the federal government; today, it is one of every 77. Finally, in our present-day work force of about 85 million people, one of every 6.5 employees is on a government payroll, either federal, state, or local.[26]

By comparison, Great Britian, considered by many to be the "supreme welfare state," has only one of every 18 employees on a government payroll. Commenting on the massive growth of government while addressing the Hinman Dental Meeting in 1975, NBC's David Brinkley said that "food, clothing, medical care, and so on have been rising at the rate of somewhere around 12-14 per cent a year; taxes, 28 per cent. As it is now, government collects and spends over 30 per cent of all money spent in the United States. At the present rate, it will soon be 50 per cent."

The growth of government has been incredible by any standard and horrendously expensive as well. One can't help but wonder why all the concern over the relatively small physicians' income component in the national health bill when there is a burgeoning and unchecked bureaucracy which threatens to engulf us all in debt. An inability on the part of our elected officials to solve successfully the nation's serious social problems may account for this tactic. After all, some say a good defense is a good offense!

LIFESTYLE

What can the American people do to keep a lid on rising health costs? Plenty! In fact, the people hold the key to potentially substantial cost savings which might be effected in our health care system. Our life-style is the primary problem, and the way we choose to live affects costs more than all of our new technology. If Americans would get more exercise and limit their consumption of food, alcohol and cigarettes, the state of the nation's

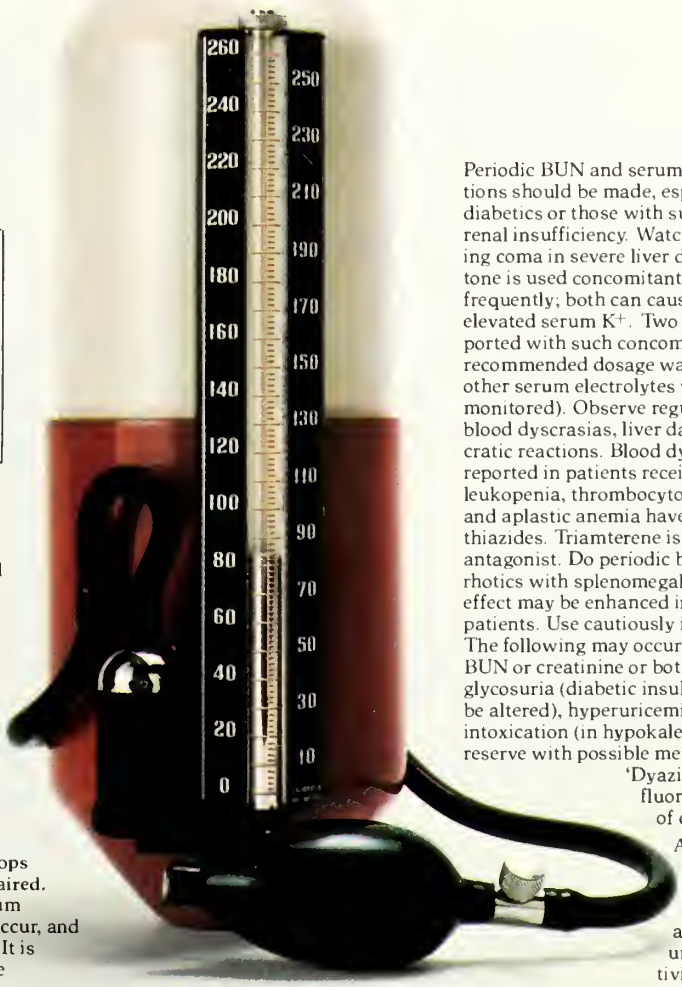
(Continued on page 349)

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* **Indications:** When the combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome. Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium sparing action of triamterene is warranted. (See Box Warning.) Routine use of diuretics in healthy pregnant women is inappropriate; they are indicated in pregnancy only when edema is due to pathological causes.

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

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eus vulgaris), in the absence of obstructive uropathy or
ign bodies. Note: Carefully coordinate *in vitro* sul-
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ponse; add aminobenzoic acid to follow-up culture
dia. The increasing frequency of resistant organisms
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e or prevent sequelae (rheumatic fever, glomerulone-
tis) of such infections. Deaths from hypersensitivity reac-
s, agranulocytosis, aplastic anemia and other blood
crasias have been reported and early clinical signs
e throat, fever, pallor, purpura or jaundice) may indi-
e serious blood disorders. Frequent CBC and urinalysis
microscopic examination are recommended during
onamide therapy. Insufficient data on children under
with chronic renal disease.

cautions: Use cautiously in patients with impaired renal
epatic function, severe allergy, bronchial asthma; in glu-
e-6-phosphate dehydrogenase-deficient individuals in
m dose-related hemolysis may occur. Maintain ade-
te fluid intake to prevent crystalluria and stone formation.

erse Reactions: *Blood dyscrasias* (agranulocytosis,
astic anemia, thrombocytopenia, leukopenia, hemolytic
mia, purpura, hypoprothrombinemia and methemo-
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tions, epidermal necrolysis, urticaria, serum sickness,
pruritus, exfoliative dermatitis, anaphylactoid reactions,
periorbital edema, conjunctival and scleral injection,
photosensitization, arthralgia and allergic myocarditis);
gastrointestinal reactions (nausea, emesis, abdominal
pains, hepatitis, diarrhea, anorexia, pancreatitis and
stomatitis); *CNS reactions* (headache, peripheral neuritis,
mental depression, convulsions, ataxia, hallucinations, tin-
nitus, vertigo and insomnia); *miscellaneous reactions*
(drug fever, chills, toxic nephrosis with oliguria and anuria,
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health would soar and health care costs would drop appreciably.

While it is impossible to estimate the toll on our health exacted by our undisciplined and Epicurean life-styles, one need only examine the statistics to evaluate the damage. As a nation, we drank 49 billion bottles of beer and 781 million gallons of wine and alcohol this past year. Almost two-thirds of all murders and nearly one-third of all suicides involve alcohol abuse, as do roughly half of all fire deaths, fatal automobile accidents and drownings.[27]

Cirrhosis of the liver kills 67 per cent more victims today than in 1956. This disease currently accounts for approximately 33,000 deaths a year and ranks seventh (up from tenth in 1969) among the leading causes of death in the United States. Although dietary deficiencies, chemical toxins, and infections are considered to be contributory factors in the development of cirrhosis of the liver, alcoholism is the major contributory cause.[28] In view of this fact, it is certainly ironic that in 1975 physicians' services received fewer dollars than were spent on alcohol.[29]

HOW AMERICANS SPENT MONEY IN 1975

	Billions of Dollars
Recreation	66.00
Alcohol	24.68
Tobacco	14.80
Personal grooming	14.27
Total	**119.75**
Hopsitals	34.67
Physicians' services	22.11
All other health care	19.83
Drugs	9.82
Total	**86.43**

These figures are taken from the US Department of Commerce's **Survey of Current Business** (July, 1976).

The effects of alcoholism are widespread and devastating. If one is to accept the most commonly quoted figure of 9 million alcoholics in this country, then one out of every 14 adult Americans suffers from alcoholism. Studies indicate that the percentage of drinkers increases with the educational level. Some 76 per cent of those with a high school education or higher drink as compared to 57 per cent of those with less than a high school education. According to the National Institute on Alcohol Abuse and Alcoholism, 1.3 million Americans between the ages of 12 and 17 have serious drinking problems. Chronic alcoholism may lead to a host of other debilitating diseases besides cirrhosis of the liver, such as anemia, neuropathy, and various central nervous system problems.[30] It is bad enough that the victims and their families suffer, but consider how alcoholism taxes our health care system.

Deaths from lung cancer have more than doubled in the past two decades, and a great majority of them are attributed to smoking. The largest single cause of cancer in the United States is believed to be the cigarette. One-third of the cancer deaths in American men and a large and growing number of cancer deaths in women are caused by cigarette smoking.[31] According to the American Society of Internal Medicine, smoking causes 90 per cent of all lung cancer and emphysema and has been linked with circulatory and heart diseases as well as cancer of the bladder, mouth, tongue, and throat.

Smokers are plagued by more frequent respiratory illnesses such as colds, and sinusitis is greatly aggravated by cigarette smoke. As a group, smokers account for 88 million more days of sickness in bed each year than do non-smokers. Accordingly, smokers spend more money on hospital and medical bills. There is evidence that secondhand smoke can have harmful effects on nonsmokers. It has been demonstrated that a home full of smoke results in an increased incidence of respiratory illnesses and asthmatic attacks among the children of smoking parents.[32]

Poor eating habits account for further health problems and additional costs to our health care system. Even those who can easily afford nutritious meals succumb to the temptations of the many "junk" foods available to Americans. Fast foods have displaced good food in our diets. Skipped meals are not missed as the streets are lined with pizza or hamburger stands. Nutritional considerations seem to take a back seat to what is pleasing, fast and inexpensive. Fat people are more susceptible than are their lean brethren to heart

(Continued on next page)

disease, strokes, and other circulatory problems.

Exercise, or the lack of it, has an obvious and significant effect on the nation's health. Slick advertising convinces us to buy fancy riding lawn mowers and other labor and exercise saving devices. People drive their automobiles to the neighborhood drugstore to buy a pack of cigarettes. We could improve our health so much by merely eating less and exercising more — and at the same time realize a worthwhile cost saving to our health system.

Accidents, many of them alcohol related and avoidable, also contribute heavily to health care costs. Industrial and home accidents result in an inordinate burden on our system. The National Safety Council estimates that all accidents cost the United States some $37 billion in 1972, $3.9 billion of which may be attributed directly to medical fees and hospital expenses.[33] Despite statistics which indicate that motorcycle riders sustain far less severe injuries by wearing helmets, motorcycle groups throughout the country continue to lobby against a mandatory helmet law. A California study found that half the motorcycle accident fatalities in that state were directly attributed to head injuries. That fact has added significance when one considers that California did not have a helmet-use law.[34]

Perhaps the most spectacular statistics attesting to the important effect of life-style on health and medical costs involve comparison between the experience in Utah and Neveda. These contiguous states in the Western United States have many similarities. They enjoy approximately the same levels of income, medical care, schooling, degree of urbanization, climate, and other factors which are generally considered to influence mortality statistics. Even the number of physicians and hospital beds per capita are very similar. Utah, however, ranks third in the United States in life expectancy at 72.90 years, while its neighbor holds the forty-fourth position (69.03 years). Furthermore, infant mortality is about 40 per cent higher in Nevada.[35] How can such discrepancies be explained? The answer has to be closely related to life-style. As Victor Fuchs explains in **Who Shall Live?** one should not conclude that the higher rate in Nevada is attributable to the "sinful" atmosphere of Reno and Las Vegas, because the infant mortality rate in the rest of the state is almost the same as in the two gambling citadels.

Utah is inhabited primarily by Mormons who do not use tobacco or alcohol and, in general, live very stable and quiet lives. The state of Nevada, on the other hand, is characterized by "high rates of cigarette and alcohol consumption and very high indices of marital and geographical instability." Nowhere is there a better example of the impact of life-style on health care and its costs. What will it take for the American people to secure a grip on their own health?

COMMITMENT TO BETTER HEALTH

I believe that the individual's attitude toward rising health care costs and toward the energy crisis are very similar. We all know what we should do but have little motivation to do it. Even after the American people became acutely aware of the energy crisis in 1973, they demonstrated a stubborn reluctance to cut back on waste and reduce consumption. Authorities have estimated that of the total energy consumed in the United States (equivalent to 38.3 million barrels of oil per day), almost one-third (or 12 million barrels of oil per day) is lost due to waste, much of which could be prevented through better conservation.[36]

Raising the price of a gallon of gasoline by five cents or even a dime is not going to inhibit consumption any more than escalating health care costs will induce people to take better care of themselves. People are going to "do their thing" unless there is a financial incentive of considerable magnitude to encourage them to do otherwise. A dollar tax on a gallon of gasoline would probably effect a change in consumption but would also undoubtably result in real hardship to millions of Americans. Negative or punitive "inducements" are of questionable value in any application, and it is likely that such an approach relating to health care would be ineffective. After all, what is more negative or punitive than death?

Despite rising health care costs and an

equivalent toll on the state of the nation's health, Americans continue their sedentary existence while eating and drinking themselves to death. Would offering incentives to better health through tax breaks or lower insurance premiums have any effect? As difficult as it might be to implement, a financial incentive for those who eat and drink with care, are not overweight, do not smoke, and are active participants in exercise programs could have a salutary effect on the condition of our health. Any positive change would also result in a saving of literally billions of dollars to our health care system. Financial incentives combined with an absolute commitment on the part of the federal government to undertake a nationwide health education program may be feasible. If it were, we could save countless lives and billions in costs. The government has convinced us of the energy crisis. It is now incumbent upon the government to apprise us of the heavy burden that we are adding to health care costs through sheer neglect, abuse, and lack of interest in our own personal health. Maintaining the same high quality of care that we enjoy today without huge increases in expenditures will require just such a commitment on the part of all individuals.

Ironically, the energy crisis may have a positive effect on our health care. Because of higher costs for fuel and the desire of some people to "do their part" in reducing consumption of fuel, we may be forced to get more exercise. It is possible that we shall even see a return to the hand pushmower and other fuel savers. Higher energy costs may force people to save on their food budgets by eliminating many "junk" foods. Perhaps we shall enjoy better health because we won't really have a choice in the matter.

CONCLUSIONS

The "health care cost crisis" is not a medical care crisis, nor is it attributable to physicians' incomes. In fact, an arbitrary reduction of all physicians' incomes by a robust 20 per cent would effect a saving in our total national health bill of only slightly more than 3 per cent.

(Continued on next page)

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An analysis of American demography indicates that an inordinate proportion of the health care dollar is spent on our elderly. Yet the percentage of the aging population is rising. We can assume that senior citizens will account for an even greater share of the overall cost burden in the future. Certainly we cannot deny them the care and dignity that they deserve for their contributions in making this country the greatest in the world. Everyone in some medically related endeavor is very concerned about the costs of medical care. All of our anxiety about financing, however, will not stop or even abate inflation, the development of new technology, or the ever-rising demand for medical services.

The increased number of accidents, many of them avaoidable, has added a heavy cost burden to the health care system. Perhaps the most important point of all is that by exercising more, not smoking, and eating and drinking less the American people could effect a greater reduction in health care expenditures than by **anything** medicine can do. If we are to agree on the need to place a lid on rising health costs wherever possible without compromising patient care, the American public must do its part. A change in life-style is obligatory.

Even if we are successful in such an important enterprise, another major obstacle which must be confronted looms ahead. The public demands the best possible health care, and the medical profession has been soundly criticized for the costs inherent in delivering it. Expensive, new technology has responded to the challenge, but how much additional technology can the system afford? Who should bear the responsibility for making a decision of this magnitude? As author Harry Schwartz has so felicitously stated, "how much medical progress can this country stand — emotionally, morally, ethically, and, not least, economically?" Our ability to keep a lid on health care costs will depend on the answer to that question.

Critics complained for years that there was

(Continued on page 367)

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A History Of The Maternal Health Committee Of The Rhode Island Medical Society 1931-1976

The Committee, A Pioneer Group, Has Served Well To Reduce Maternal Mortality In The State

By STANLEY D. DAVIES, M.D.

In 1931, at the height of the depression, maternal mortality reached a new peak with a rate of 73 per 10,000 live births. At this point, Doctor Edward S. Brackett who was the Chief of Staff of the Providence Lying In Hospital, prevailed on the Rhode Island Medical Society to establish a Maternal Mortality Committee. He was made chairman of the committee, and Doctor Milton Goldberger was appointed as the secretary to help investigate these deaths. Although we were not the pioneers in these studies, we were the first state in the nation to have a Maternal Mortality Committee.

In the early twenties the New York Academy of Medicine began to study puerperal deaths, but we usually think of Doctor Phillip F. Williams of Philadelphia as the pioneer in maternal death studies. He was the appointed Chairman of a Committee on Maternal Welfare of the Philadelphia County Medical Society in 1930. In 1931 he began holding open meetings in the amphitheater of the Philadelphia General Hospital to review these cases. The physician in charge would present the case and was required to reply to questions that were raised by the audience, similar to a court trial. These meetings aroused a great deal of interest among visiting phyicians from surrounding cities. Doctor Williams continued to chair this Committee until 1940, and during this period the maternal mortality rate in Philadelphia dropped from 68 per 10,000 live births to 23. It will be noted in the graph (Fig. 1, page 357) that Rhode Island showed a similar dramatic drop in maternal deaths during the same years. It would seem that we can attribute this to two factors: the establishment of a Maternal Mortality Committee in Rhode Island, and a shift from home to hospital deliveries. There were declivities later that might be attributed to the discovery of sulfa drugs and antibiotics, establishment of blood banks, better pre-natal care, fewer midwives, better training of obstetricians, improved surgical techniques, and better obstetric anesthesia coverage.

In 1938, when Doctor Brackett became president of the Rhode Island Medical Society, the first report of the committee appeared in the **Rhode Island Medical Journal.** In this

STANLEY D. DAVIES, M.D., *Past President* 1967-8, *Rhode Island Medical Society; Chairman, Maternal Mortality Committee,* 1956-1976.

paper 294 deaths were reported for the years 1931-1935. Table I compares the number of deaths in those five years with more recent five year studies.

TABLE I
MATERNAL DEATHS IN RHODE ISLAND

1931-35	294
1960-64	41
1965-69	27
1970-74	17

Table II shows how the major causes of death have changed and declined. Septic abortions in those years were chiefly criminal

TABLE II
MAJOR CAUSES OF DEATH

	1931-35	1970-74
Septic Abortion	52	1
Other Infection	37	5
Eclampsia	40	0
Cesarian Section	24	0
Hemorrhage	23	2

abortions because infection with a spontaneous abortion is rare. Undoubtedly therapeutic abortions, particularly when done for medical indications, have reduced the deaths from heart disease, hypertension, kidney disease, and other such conditions where pregnancy would threaten the life and health of the mother. With our present mores where most pregnancies are planned, spaced, and wanted, the patients have proper pre-natal care. Our residents now may go through their entire training without seeing a case of eclampsia. There has been only one death from toxemia in Rhode Island in the last fifteen years. In the early thirties Cesarean section was considered a serious operation. In 1930 Plass stated "That in the best clinics the mortality rate averages around five per cent, but the country over it is probably nearer ten per cent." Many Cesarean section deaths were due to the fact that many of the operations were of the classical type and done by general surgeons. Some deaths were due to the primary cause, such as hemorrhage or toxemia that was the indication for the operation. It is noted that we are still having deaths from infection. Perhaps we are feeling too secure with all of the new antibiotics that are available and are becoming a bit careless.

In 1956 the Council on Medical Services of the American Medical Association published "A Guide for Maternal Death Studies." Prior to this it was difficult to compare statistics with other states because of the lack of unanimity as to what constitutes a maternal or an obstetric death. This Guide helped to group the different diseases and causes into the three categories of (1) Direct, (2) Indirect, and (3) Non-Related causes. The obstetric death rate commonly referred to as the "maternal death rate," is defined as the number of direct obstetric deaths per 10,000 live births. With 59,243 live births occurring in Rhode Island in the years 1970 through 1974 there were 9 direct obstetric deaths. This would mean that our obstetric death rate is only 1.19. This is by far the lowest in the history of our Committee. The last available figure for the United States is 2.41 in 1970.

The statistics are presented in increments of five years because we have so few deaths now and in some years no deaths. Therefore, if we report our cases in groups of five years the statistics will be more valid. Table III shows how the number of maternal deaths has diminished in the five year increments.

TABLE III
MATERNAL DEATHS

	1960-64	1965-69	1970-74
Number Deaths	41	26	17
Direct	18	11	9
Indirect	11	2	4
Non Related	12	13	4

HISTORY OF THE COMMITTEE

Table IV shows how following our leadership other states began to form Maternal Mortality Committees. The first ten are listed.

TABLE IV
YEAR OF FORMATION OF STATE MATERNAL MORTALITY COMMITTEES

1931—R.I.	1935—S.C.
1932—N.J.	1935—Texas
1934—Ga.	1936—D.C.
1934—N.H.	1937—Del.
1935—Md.	1937—N.Y.

but other states followed in rapid succession. Now all but seven of the fifty states have actively functioning committees. In 1961 at a meeting of the American College of Obstetrics and Gynecology in Miami the chairmen of the committees in the various states met to form a National Committee on Maternal Mortality.

(Continued on next page)

As Doctor Brackett was president of our State Society in 1938-39, he appointed Doctor John G. Walsh to take his place on the committee. Doctor Goldberger continued to serve as Secretary of the Committee until 1941, when ill health forced him to retire from private practice. He moved to Tuscon, Arizona. During the ten years that he served, however, he represented Rhode Island at many New England and national meetings as the interest in maternal mortality increased in those years. We have a record of the deaths in 1941 that were gathered by Doctor Thomas E. Fogarty. In that year there were 29 deaths, 25 of which were direct obstetric deaths. These are well documented, and the causes of deaths were almost equally divided among the usual triad of hemorrage, toxemia, and infection. Now, however, it seems that many of the deaths are due to very rare and bizarre causes.

During the years of the Second World War the committee was inactive. For the period following the war and until 1960 we have fragmented reports that are not complete enough for statistical analyses. Before the war Doctor Walsh's committee met quite regularly on Wednesday afternoons at the Providence Lying In Hospital. However, in his report he stated that these conferences were very poorly attended. Perhaps this is the reason why after the war he began to hold the meeting in his home. The cases were usually discussed first, and then he and Mrs. Walsh would serve a delicious dinner. Doctor Walsh was always a genial host, and there are many happy memories of these meetings. The dinners of course renewed interest in the committee, and there was usually one hundred per cent attendance. At first the committee was constituted of obstetricians from Providence, but Doctors John E. Carey of Newport and Richard H. Dowling of Woonsocket were soon included.

In 1956 Doctor Walsh relinquished his chairmanship and suggested that the author take his place, although he continued to serve as a member of the committee. During the next twenty years the committee was expanded to fifteen members in order that there would be representation from all of the hospitals that had obstetric services. This made it possible for the members to carry back to their hospitals and to the attending physicians suggestions of the committee as to how individual cases might have been treated differently.

Over the years Doctors Goldberger, Thomas E. Fogarty, William J. MacDonald, William A. Reid, J. Kenneth Beezer and John R. Evrard have served as secretaries and gathered the facts for the case studies. The secretary would review the hospital record and interview the attending physician or other physicians involved in the case. Reports were then brought to our meeting, discussed, and classified as to whether they were direct, indirect, or non-related. If direct, they were classified as preventable or non-preventable. If the case was considered preventable the committee tried to determined and decide, if possible, who was responsible. This, of course, could be the patient, the attending physician, the consultant, the hospital, or a combination of any of these. In using the term preventable the committee wishes to stress that this does not necessarily imply neglect. It is used in the sense that under ideal conditions with adequate assistance and consultation better results might have ensued.

Prior to 1954 the committee was made up entirely of obstetricians. From 1954 on Doctor Herbert Ebner was first invited as a guest and later in 1954 made a permanent member of the committee. His vast experience in obstetric anesthesia has been invaluable to the committee in our discussions of the treatment of these cases. In the same way Doctor George W. Anderson, who came to Rhode Island in 1958 from the Johns Hopkins Medical School, was always invited as a guest because of his knowledge as a pathologist and experience with maternal mortality studies in Baltimore. He was soon made a permanent member of the committee. He has always contributed greatly to our discussions.

One of the problems of the committee has been the difficulty in procuring accurate reports of the causes of death. Many cases did not have autopsies, and in those that did, the reports were often scanty and inaccurate. In 1961 Doctod Harold L. Beddoe was made the Chief Medical Examiner for the State and served in that capacity for six years. He was soon made a member of our Committee and helped with the reports while he held

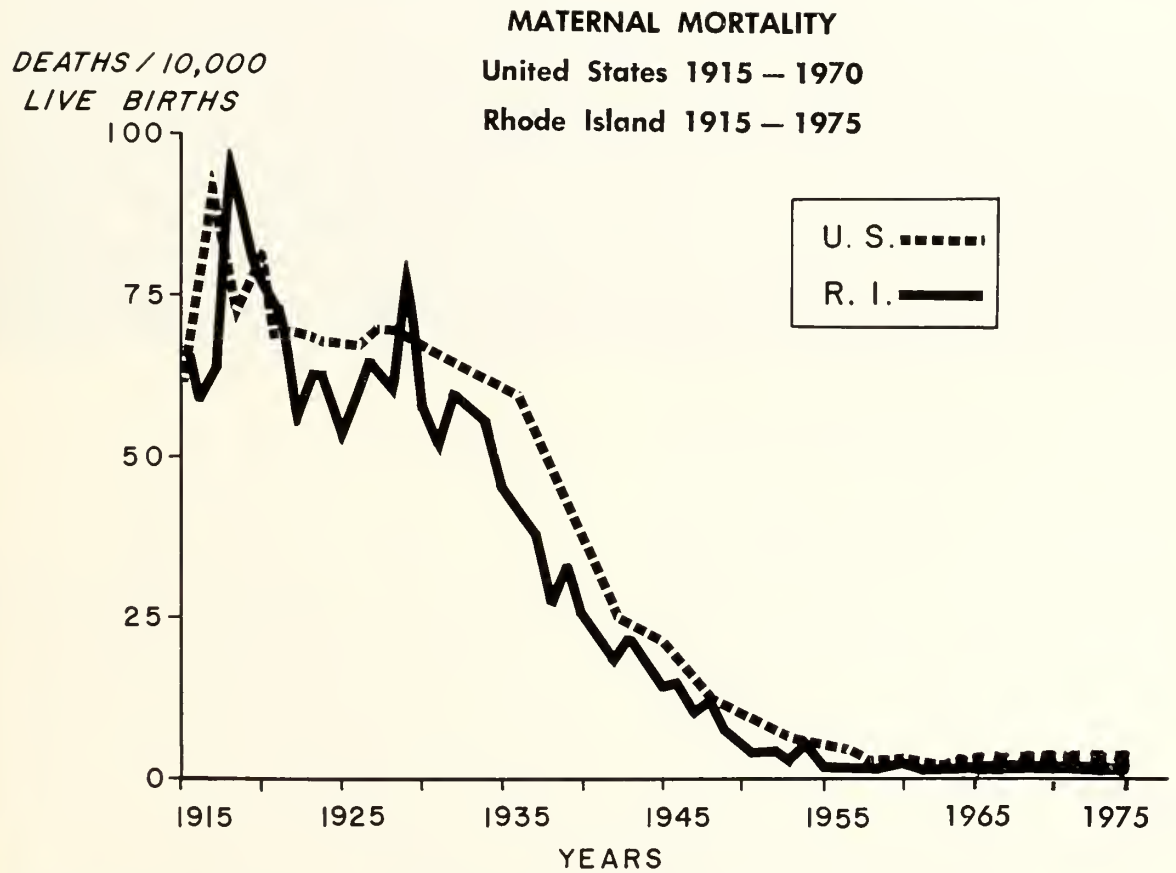
that office. Three years ago when Doctor William Q. Sturner was made the State Chief Medical Examiner he was invited to join us. He has shown much interest in obtaining or performing autopsies whenever possible, which will help us to have more complete reports and accurate statistics.

In the earlier years of the committee we were anxious to preserve the anonymity of our cases because of the fear of litigation. The purpose of the committee is to help improve obstetrics in the state by study and education. The committee has no authority to censor or no desire to do so. In 1962, because of this, we were able to prevail upon the state legislature to introduce and pass bills that would make the transactions of the committee and the case reports confidential and inadmissable in court in case of any litigation. We can thank former Senator William Fecteau of Coventry and former Representative Eleanor Slater of Warwick for drafting these bills.

When there were fifteen or twenty deaths to discuss each year, meetings as often as two or three times a year were necessary. In 1958, since the number of deaths was diminishing, we felt the name of the committee should be changed to The Maternal Health Committee. In this way we have been able to discuss other subjects related to obstetrics. In 1968, when there were changing attitudes and legislation concerning therapeutic abortion, the committee held special meetings. Some members from the committee held joint meetings at that time with the Committee on Medicine and Religion of the Rhode Island Medical Society.

In 1958 with its new name the committee began to raise the question as to whether it should include perinatal mortality studies among its functions. It was felt, however, that a separate committee should be formed, because pediatricians also should be involved in these studies.

(Continued on next page)



The first perinatal mortality committee was formed in 1958 with Doctor Bertram H. Buxton, Jr., serving as chairman. It was composed equally of pediatricians and obstetricians. The committee has become very active recently with meetings every two months. A seminar once a year has been held for the past three years. Because there are so few maternal deaths, some believe that the Maternal Mortality Committee should be discontinued. This was discussed at length in a meeting in February of 1977. It was decided that both committees should continue to function, but that two members from each committee should meet as necessary as a task force to discuss their common problems.

SUMMARY

The chief purpose of bringing to the membership of the Rhode Island Medical Society the history of the Maternal Health Committee is to show how from its inception in 1931 it has grown and continued to function in an important manner. Whereas it began originally with a purpose of studying maternal deaths it now includes other problems concerning obstetrics. It hopes not merely to prevent deaths, but also to lessen morbidity and consequently reduce perinatal mortality. The graph (Fig 1, page 357) demonstrates that the greatest decline of maternal deaths occurred from 1931 to 1941 following the inception of the committee. This decline was before the days of antibiotics, blood banks, trained obstetricians, and other factors that have brought the death rate to almost an irreducible minimum. The term "irreducible minimum" has been used by many authors for years. However, as long as we have preventable deaths, we have not reached that minimum and the committee should continue to function.

Another factor that caused a sharp decline in those same years is the shift from home to hospital deliveries. We are now again being pressured by requests for home deliveries. There are groups, not made up of physicians, who are trying to promote this trend. These groups are very vocal, and their ideas are being spread through the media of television, radio, newspapers, and women's lay magazines, not realizing that they are putting obstetrics back forty years. It is only a fad and will die out as all fads do, but not before we have some deaths from the lack of techniques and modern facilities available in the hospital.

ADDENDUM

In 1976 the author resigned as chairman of the committee and would like to take this opportunity to thank the members for their active participation and regular attendance over these twenty years. Those who have served as secretaries did not have an easy assignment in looking up the case histories. Therefore, it would be important especially to thank Doctors William Reid, Jack Beezer and John Evrard for serving in this capacity. At our last meeting in 1976 it was suggested that Doctor William Reid, who had served on the committee for the longest period of time, be appointed as the new chairman.

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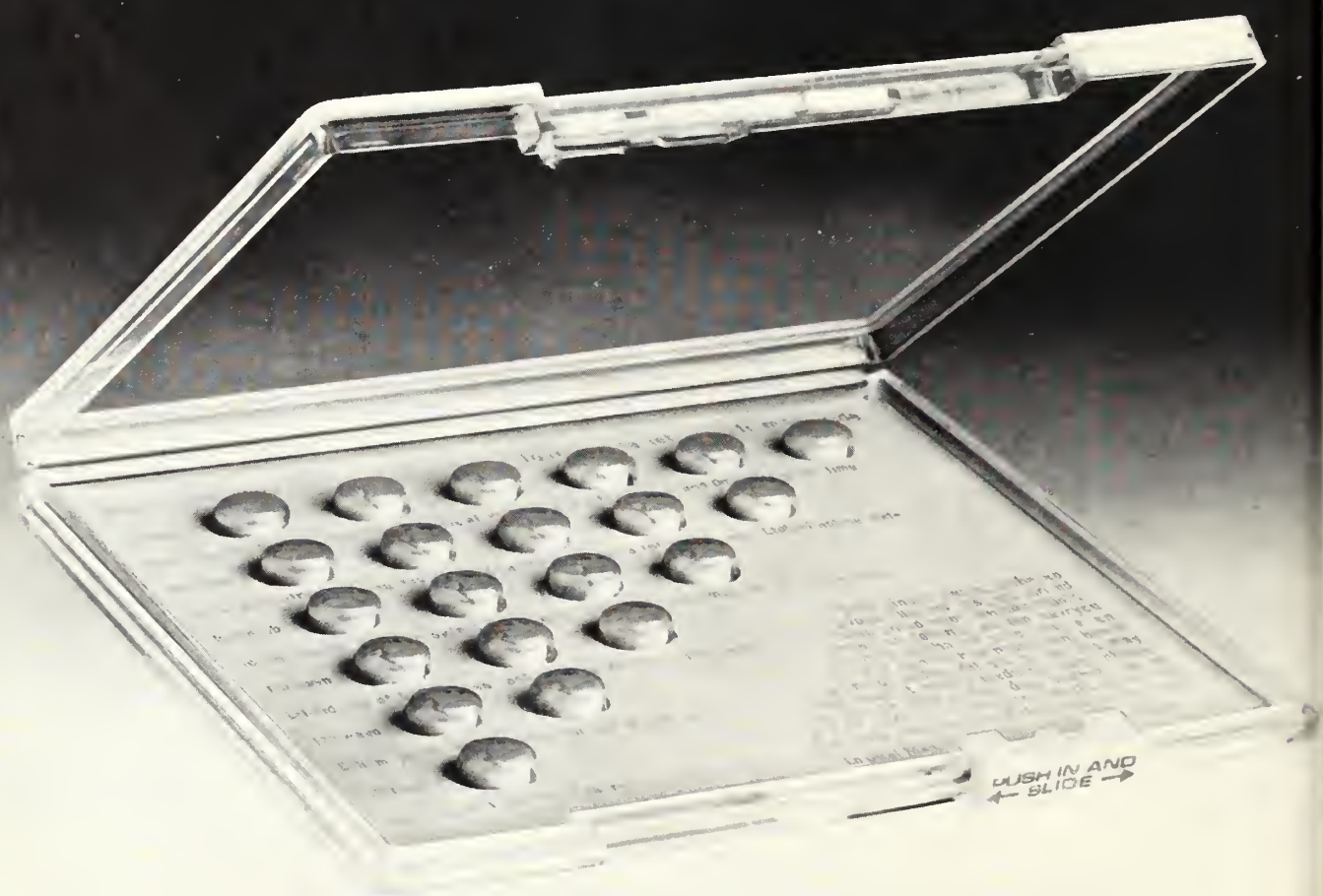
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Editorials

PHYSICIAN, SCHOLAR, GENTLEMAN

In the April, 1976 issue of the **Journal** shortly after the death of Doctor Francesco Ronchese, we carried the following notice in our editorial columns:

"Doctor Ronchese, a frequent contributor to this **Journal,** passed away on March 25 in his 84th year. His most recent contribution appeared in the March issue, which went to press shortly before his death. In our files we still hold several brief papers, which we shall publish posthumously.

"Doctor Ronchese was an inveterate and frequent visitor to the Society's Medical Library, which he enriched not only with his presence, but also with gifts of a substantial number of gems from his personal library. Perhaps he had a premonition of death, as he made these gifts only in the recent past.

"His urbane manner, gentle demeanor and kindness, and profoundly scholarly attributes were well known to colleagues and patients alike. He was a recognized authority in his chosen specialty of dermatology.

"With Doctor Ronchese's passing both the **Journal** and the Library have lost something of special quality. He was in the true sense a gentleman and a scholar. We shall miss him."

We are pleased to devote this special issue to Doctor Ronchese. We are publishing herein the last of his manuscripts. Also we are pleased to resume publication of the Dermaquiz, which he founded. The new series will be conducted by Doctors Bencel L. Schiff and Arthur B. Kern. We look to publishing this feature at regular intervals.



AUTOPSIES

The **AMNews** of March 21, 1977 carried an article subtitled "Breathing New Life into the Autopsy." Pathologists at a recent meeting in Miami spent one day discussing the declining autopsy rate. Currently 10-20 per cent of hospital deaths have post-mortem examinations while twenty years ago the rate was 40-60 per cent.

Among the reasons cited for this decline are the dropping of minimum autopsy percentages required by the JCAH and the declining interest among some departmental chairmen in the routine autopsy. Priorities formerly given to the routine autopsy now may be given to research, both in time and facilities. Cost containment is another factor. Autopsies are expensive, averaging $750 to $1,000, and the department does not bill for this service. It is suggested that autopsies be selective or educational rather than routine.

Somewhat paradoxically, in our culture, where autopsies have declined in professional favor, the laity may be more concerned with them than in the past. Today there is a crescendo of public concern over the right to medical care, the right to life, the right to die, and death with dignity. The concept of the dead helping the living by means of organ or tissue donation has received public acceptance. The reality of death in a society which has gone to extremes to deny death is also becoming manifest. With changing social attitudes the autopsy is becoming a legitimate topic of concern. One could say that the postmortem is a logical extension of medical care and the right to die. There is no doubt concerning the value of the autopsy to the practice of medicine. The pathologist will continue to have the last word. Clinicians should continue to request postmortem permission. However, help for the ailing autopsy may come from an unexpected source, the patient's family.

In reviewing a paper titled "Problems of the Autopsy in 1670 A.D.," I was surprised to find that at that early date relatives were requesting autopsies. It should be remem-

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Hopkins

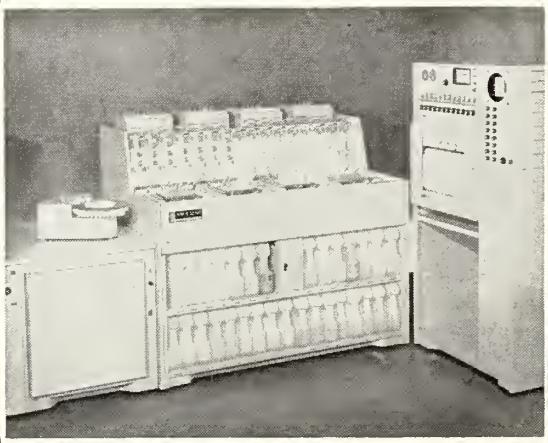
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bered that in those days severe penalties were meted out for body snatching.

Nowadays too, relatives are asking for information concerning the autopsy. If the physician is approached on this matter, a positive attitude should be taken, even though at times the request may seem inappropriate. Usually, physicians find it necessary to intrude into a family's bereavement to ask permission, but the author has had numerous inquiries over the past few years concerning autopsies, at times even prior to the patient's demise. This paper is not intended to sell the autopsy, but, if the physician is asked, he should not be cursory or abrupt. The questions asked usually relate to the following topics:)1 The patient will be treated with respect, 2) An autopsy may be thought of as an operation performed after death, 3) There will be no disfigurements, 4)There are no religious taboos, 5) Burial will not be delayed, 6) The autopsy is a hospital service. Although it may take up to 200 man-hours of work to complete, there will be no charge for this. Some hospitals provide ambulance service to bring the body to the hospital, if the patient should die at home. 7) After the autopsy is completed and the reports are all in, the results will be discussed with the family.

It is right for the family to ask about the results of the autopsy. They should feel no guilt about requesting information. They should understand that, after the emotional bereavement is past, the facts will be known and they will not be wondering just what did happen to the deceased.

If an autopsy is firmly objected to by members of the family, a compromise may be reached with them in that the surgical incision may be opened or the heart and lungs alone examined. A limited rather than a complete autopsy may be performed.

Permission for the autopsy is most important. Relatives, in this order, may sign permission: a) the surviving spouse, b) adult children, c) adult grandchildren, d) parents, e) brothers and sisters, f) nephews and nieces, g) grandparents, h) aunts and uncles, i) cousins, and j) stepchildren.

When the patient himself has requested an autopsy, it is possible that his wishes can be successfully contested by relatives. This also

applies in cases where a person has made it known that he or she wishes to donate his or her body or specific tissues or organs to a medical school. Legally the deceased has no property rights upon cessation of vital signs. Even though he is sincere, his request in itself does not constitute ultimate legal permission. On the other hand, the relatives may not have the final word concerning some postmortem examinations. Medico-legal cases, members of the armed forces, and passengers and crew of aircraft involved in accidents may be subject to autopsy by order of appropriate authority.

It has been suggested that autopsies be used to audit the quality of medical care. How this would be administered has not been discussed, but it is at best a very controversial recommendation, even where autopsies are judged to be educationally important. However, many so-called routine autopsies yield unsuspected findings that would otherwise be missed.

The decline in interest in autopsies warrants very serious consideration.

John R. Stuart, M.D.

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RISING HEALTH CARE COSTS

(Continued from page 352)

a shortage of physicians. Now that there are 114 medical schools in operation (up from 88 in 1965) and many more physicians in practice, these same critics deplore the fact that costs are escalating. The number of physicians has grown by almost 50 per cent since 1950. Obviously, more manpower and utilization will result in increased expenditures on health.

America enjoys better medical care today than ever before in its history, and the quality of care is steadily improving. New technology has contributed greatly to our health care costs and the medical "miracles" of the past are becoming almost commonplace.

As emphasized in the Robert Wood Johnson Foundation report, medical care is far more accessible now than it has ever been, which has influenced health care costs; but we could continue to improve the nation's health level, while reducing expenditures, if we would correct a whole array of social and environmental conditions which have nothing to do with medical care. Better nutrition, sanitation, housing, and higher education levels would have an instantly favorable impact on medical bills.

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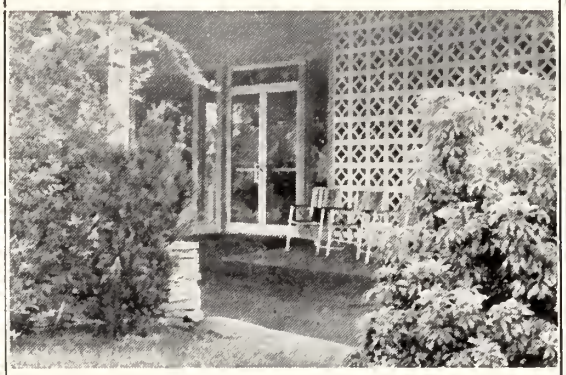
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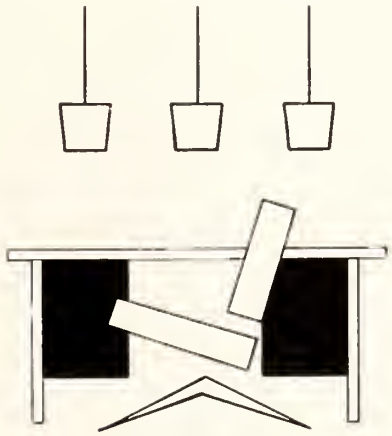
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ANSWERS TO DERMAQUIZ

Left: The lesion on the dorsum of the left hand was a nodular malignant melanoma. Not apparent in the photograph was the significant color variation throughout the tumor as well as slight surrounding erythema. Patient expired with widespread metastases 8 months after the photograph and wide surgical excision.

Right: The lesion on the nose was a pigmented basal cell carcinoma. Significant was the slow growth, history of recurrent bleeding and crusting and the tumor's pearly border. There has been no recurrence since treatment with a course of superficial x-ray therapy.

Rhode Island Medical Journal

August, 1977

Vol. 60, No. 8

Research In Recombinant DNA

See Page 375

A character all its own.



Valium (diazepam) is a benzodiazepine with a character all its own. Pharmacologically, it has been described as more potent mg-per-mg than other available anxiolytic benzodiazepines. Pharmacokinetically, only Valium provides active *diazepam* as well as the active metabolites 3-hydroxydiazepam, desmethyldiazepam and oxazepam.

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Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported, should these occur, discontinue drug. Isolated reports of neutropenia, jaundice, periodic blood counts and liver function tests advisable during long-term therapy.

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Rhode Island Medical Journal

AUGUST, 1977 VOLUME 60, No. 8

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A Message From The Dean

RATES OF ACCEPTANCE TO U.S. MEDICAL SCHOOLS (1977)

At periodic intervals this page has been used to summarize for the practicing physicians of Rhode Island the rates of admission of Rhode Island and other New England students who have applied to the United States medical schools (see **Rhode Island Medical Journal,** November, 1974 and September, 1976).

Table 1 presents the rates for both application and acceptance to the 115 American medical schools for the freshman classes of September 1976 and September 1977. These data are analyzed according to state and expressed also in terms of numbers of applicants or acceptants per 100,000 population.

TABLE 1.
Rates of Acceptance to US Medical Schools for Classes Beginning in September 1976 and 1977

Applications from	No. of US Med. School applicants per 100,000 population		No. of state residents accepted to any US Med. School		Rates of Acceptance Percent of applicants		Rates of Acceptance per 100,000 population	
	1976	1977	1976	1977	1976	1977	1976	1977
Connecticut	19.2	18.8	163	168	28.0	29.5	5.4	5.5
Maine	9.3	7.5	36	20	39.1	26.7	3.6	2.0
Massachusetts	18.9	19.3	314	317	29.3	28.8	5.4	5.6
New Hampshire	7.6	8.4	15	19	26.8	30.6	2.0	2.6
Rhode Island	15.2	13.7	53	44	36.8	33.9	5.6	4.6
Vermont	19.1	20.8	44	42	51.8	43.8	9.9	9.1
New England, Total	17.2	17.1	625	610	30.8	30.0	5.3	5.1

The rate of **applications** per 100,000 New England population for the past few years has stabilized at about 17 per year. The number (and rate) of US medical school applications submitted by Rhode Islanders continues to be below the New England region average. The Rhode Island rate is even further below the national rate experienced by the American medical schools, which is close to 19 applicants per 100,000 population.

The number of New England residents **accepted** by American medical schools for the academic year about to begin has diminished slightly to 610. The total number of Rhode Islanders accepted by the American medical schools has also dropped somewhat when compared with last year's results (Table 2). The state of Rhode Island incidentally has averaged about 39 acceptances per year since 1970.

The geographically defined rates of admission for the class beginning in September 1977 as expressed first in terms of per cent of applicants accepted, finds Rhode Island (33.9 per cent) above the New England average (30.0 per cent), but slightly below the national rate of acceptance (34.1 per cent). The rates of acceptance, as expressed in terms of

(Continued on next page)

numbers accepted per 100,000 state population, are also incorporated into Tables 1 and 2. The rate for Rhode Island has slipped since last year as it has for many of the New England states. New England continues to do more poorly than the rest of the nation, a statistical observation which has been observed in every year of this decade. The applicants from the New England states receive approximately five acceptances per 100,000 population, while the rate is better than seven in the remainder of the country.

TABLE 2.
Acceptances to US Medical Schools
(Class Beginning, September 1977)
Per 100,000 Population

Applicants from	1970	1971	1972	1973	1974	1975	1976	1977
Connecticut	4.9	5.1	5.0	6.7	6.5	6.5	5.4	5.5
Maine	3.0	1.9	2.0	2.5	2.7	4.1	3.6	2.0
Massachusetts	4.9	5.2	5.0	5.2	5.3	5.8	5.4	5.6
New Hampshire	2.0	3.0	2.4	3.3	3.3	3.9	2.0	2.6
Rhode Island	2.6	3.2	4.0	4.1	4.1	4.5	5.6	4.6
Vermont	7.0	10.3	8.5	7.2	9.2	8.3	9.9	9.1
New England, Total	4.5	4.8	4.6	5.2	5.3	5.7	5.3	5.1

Table 2 illustrates the yearly rates of acceptance since 1970 per 100,000 population in each of the New England states. Rhode Island formerly shared with Maine and New Hampshire the lowest acceptance rates. Since 1972 Rhode Island has moved toward a more median position in the New England region, while Maine and New Hampshire continue to place fewer of their young men and women in the US medical schools, as contrasted either with the other New England states or the United States in general.

TABLE 3.
Rhode Island Residents Admitted to all US Medical Schools (1970-1977)

Admitted to	1970	1971	1972	1973	1974	1975	1976	1977
Brown University	4	5	4	11	16	13	30	22
University of Vermont	5	7	6	3	5	6	5	3
Others	16	18	28	25	18	24	18	19
Total	25	30	38	39	39	43	53	44

The statistics incorporated into this brief report were derived from the yearly admissions action summary records of the Association of American Medical Colleges as well as from the yearly summary reports published by the American Medical Association. Some discrepancies exist in these numbers (which are based exclusively upon how each applicant describes himself), and we have chosen always to accept the more conservative number. These records would indicate that a minimum of 311 Rhode Island residents has been accepted and subsequently admitted to a US medical school since 1970 (Table 3). This average is about 39 per year. Of these 311 successful applicants, 105 have matriculated at Brown University, 40 at the University of Vermont, and 166 at the 114 other accredited medical schools of the United States. Expressed in different terms, about 45 per cent of all Rhode Island men and women **currently attending** a US medical school (81 of 179) are receiving their medical education at Brown University.

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The administration of meclizine to pregnant rats during the 12-15 day of gestation has produced cleft palate in the offspring. Limited studies using doses of over 100 mg./kg./day in rabbits and 10 mg./kg./day in pigs and monkeys did not show cleft palate. Congeners of meclizine have caused cleft palate in species other than the rat.

Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

WARNINGS. Since drowsiness may, on occasion, occur with use of this drug, patients should be warned of this possibility and cautioned against driving a car or operating dangerous machinery.

Usage in Children. Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

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and economy

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ntraindications: Sulfonamide hypersensitivity; pregcy at term and during nursing period; infants less than months of age.

rnings: Safety during pregnancy has not been estabed. Sulfonamides should not be used for group A a-hemolytic streptococcal infections and will not eradie or prevent sequelae (rheumatic fever, glomerulonetis) of such infections. Deaths from hypersensitivity reacs, agranulocytosis, aplastic anemia and other blood crasias have been reported and early clinical signs e throat, fever, pallor, purpura or jaundice) may indie serious blood disorders. Frequent CBC and urinalysis microscopic examination are recommended during onamide therapy. Insufficient data on children under with chronic renal disease.

cautions: Use cautiously in patients with impaired renal epatic function, severe allergy, bronchial asthma; in glue-6-phosphate dehydrogenase-deficient individuals in m dose-related hemolysis may occur. Maintain adee fluid intake to prevent crystalluria and stone formation.

verse Reactions: *Blood dyscrasias* (agranulocytosis, stic anemia, thrombocytopenia, leukopenia, hemolytic mia, purpura, hypoprothrombinemia and methemoinemia); *allergic reactions* (erythema multiforme, skin tions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis); *gastrointestinal reactions* (nausea, emesis, abdominal pains, hepatitis, diarrhea, anorexia, pancreatitis and stomatitis); *CNS reactions* (headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo and insomnia); *miscellaneous reactions* (drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L.E. phenomenon). Due to certain chemical similarities with some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia as well as thyroid malignancies in rats following long-term administration. Cross-sensitivity with these agents may exist.

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Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

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* * *

The National Gender Selection Center has a gender selection kit, which enables parents to preselect, before conception, the gender of their planned child. It is the result of years of research by New York's Columbia-Presbyterian Medical Center. The kit comes in two models—male and female.

* * *

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D. C. Heath has published "Better Homes for the Old," a study of the adequacy and hospitality of nursing homes in general (better than the popular conception). The circumstances of admission to nursing homes and the various plans for financing nursing home care are discussed. 176 pages—$15.00.

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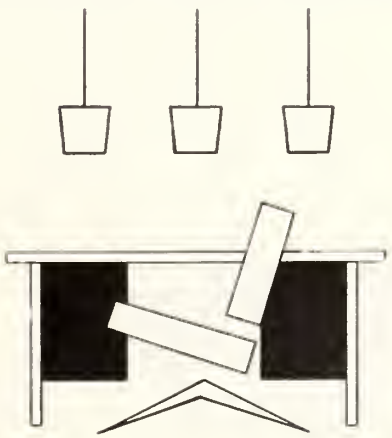
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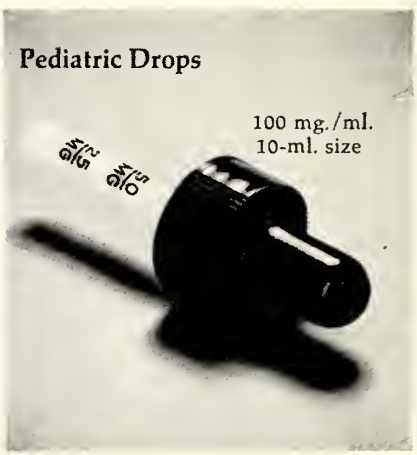
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An Epidemiological And Evolutionary Approach To The Recombinant DNA Problem

We Are Entering Dangerous Territory If We Limit Exploration Because Of Incapacity To Foresee Its Consequences

By Bernard D. Davis, M.D.

Five years ago, through the merging of several recent advances in the chemical manipulation of bacteria, it became possible to use **Escherichia coli** as a factory for the preparation in readily purified form of short sequences of DNA from any organism. The steps in this development include isolation by differential centrifugation of small autonomously replicating circles of DNA in bacteria, called plasmids; use of "restriction" enzymes from various bacteria to cleave these plasmids (or other DNA) at specific short palindromic sequences in a way that creates overlapping ("sticky") ends; annealing of the opened plasmid with other pieces of DNA with the same complementary ends, followed by enzymatic sealing of the joints; discovery of conditions that permit entry of the resealed plasmid into **E. coli** cells; and development of ingenious techniques for detecting the strains that carry a plasmid with an inserted piece of DNA.

It is impossible to foresee all the possible uses of so versatile a tool, which may well turn out to be as valuable for molecular genetics as the use of radiactive isotopes. I shall note briefly only some of the potential uses that can already be foreseen. An obvious medical and commercial application is the manufacture of medically valuable human proteins — including not only hormones but also antibodies and, in the future, specific cancer antigens. Another possiblity, the incorporation of genes for nitrogen fixation in higher plants, seems more problematic. But it is in fundamental studies in biology that the most exciting and predictable uses of the new technique may be seen — particularly in mapping and sequencing the genes of animal cells (including those of man), and in analyzing the mechanisms of regulation of these genes. Moreover, these prospects are all the more promising since the purified short DNA segments that are readily obtained by the recombinant technique (up to 200 nucleotides long) can now be easily se-

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Read in slightly different form before the Harvard Club of Rhode Island on May 23, 1977. Reprinted from the May 30, 1977 issue of *Chemical & Engineering News* with the kind permission of the author and the copyright owner, *The American Chemical Society.*

BERNARD D. DAVIS, M.D., *Director of Bacterial Physiology Unit, Harvard Medical School*

quenced in two days through analytical techniques recently developed by Maxam and Gilbert.[1]

Since all the differentiated cells in a mammal contain the same full set of genes, but differ in the pattern of which are turned on and which turned off, gene regulation is the key to one of the greatest challenges in biology — the mechanism by which a fertilized egg develops into a differentiated organism. And loss of normal gene regulation is also the key to the aberration of cell growth that is called cancer. But our present knowledge of gene regulation in mammalian cells is exceedingly primitive, compared with that in the much simpler bacterial cell (with only 1/1000 as much DNA). One would therefore have thought that a major breakthrough in the study of mammalian genes would be hailed with enormous enthusiasm. Yet the development of recombinant DNA has for a variety of reasons given rise to widespread public anxiety and to deep polarization in the scientific community.

One of the main reasons for this sorry state is the way the problem was introduced to the world. The molecular biologists who developed and first began to use the technique became anxious about the possible hazards; and, with the best will in the world, they felt intellectually and morally obligated to solve the problem of estimating the hazards and to restrict their own activities until they had done so. But this approach has proved to be too reductionist. The problem, though created by molecular biologists, is in fact primarily one in epidemiology — and there are many professionals who spend their lives in this area, studying how microbes cause disease and how various factors influence their spread. The problem is also partly one in evolution, since it involves estimating the probability of survival of organisms with novel combinations of genes. Unfortunately, the discussion had relatively little input from experts in these fields — not only at the start, but even at the recent National Academy of Sciences Forum in March, 1977. I would therefore like to consider the problem from the perspective of these fields, emphasizing three separate risks: that a harmful organism may inadvertently be produced; that it may cause a laboratory infection; and that it may spread into the community. In addition, I shall consider briefly two other, long-term problems that have also been causing concern: our responsibility in thus meddling with evolution, and our responsibility in moving toward genetic engineering in man.

Let me start by reviewing the pertinent epidemiological and evolutionary principles.

UNDERLYING PRINCIPLES

1. **Natural Selection.** Though the ultimate source of evolutionary change is the production of hereditary variation, **it is natural selection that determines which variants, if any, survive and spread.** In fact, only an infinitesimal fraction of the products of evolutionary experimentation survive, the rest being ruthlessly culled out by natural selection. In particular, among the virtually infinite variety of recombinants produced within a species by the process of sexual reproduction, the standard pattern of selection in a stable environment is a stabilizing (normalizing) one: excessive deviations from the norm make an organism less effective in the Darwinian competition and therefore less likely to leave progeny.

2. **The Meaning of Species.** As evolution proceeding from prokaryotes (bacteria with a single chromosome) to eukaryotes (higher organisms, with a more complex genetic apparatus) it created the mechanism of sexual reproduction, which reassorts the genes of paired parents. This process provides vastly increased genetic diversity for natural selection to act on. But the production of unlimited recombinations from the total pool of genetic material in the living world would not be useful. Hence, the development of sexual reproduction was accompanied by the development of fertility barriers, which are the basis for defining species: groups of organisms that reproduce in nature only by mating with other members of the same group.

The evolutionary value of such fertility barriers is clear: to avoid useless production of grossly unfit, non-viable progeny. This pattern illustrates a more general principle, that **all natural selection is for a balanced genome:** (i.e., the total set of genes in an organism): a gene is thus selected for not

in a vacuum, but only if it is coadapted to the rest of the organism's genes. Moreover, this principle clearly applies to bacteria, even though these organisms, as we shall see, do not have true species demarcated by fertility barriers. These considerations are especially pertinent to the products of DNA recombined from distant sources.

3. **Bacterial Genetics.** Though Darwin was unaware of the existence of the invisible world of microbes, their absorption into the Darwinian framework began shortly thereafter, unwittingly, with Pasteur. His classical studies of fermentation demonstrated that different media, such as milk or grape juice, select for different organisms from the same mixture that can reach them from the air. But it was not until the 1940s that heredity in bacteria was shown to depend, as in higher organisms, on genes: units that are linked on a chromosome and capable of mutation, transfer, and recombination. Indeed, with this development it became possible to use microbes to demonstrate the force of natural selection in an overnight experiment — for example, in the selection of drug-resistant mutants.

Unlike eukaryotes, prokaryotes ordinarily reproduce by asexual cell division, which means that the genetic properties of a strain remain constant for generation after generation, except for rare mutations or for rare transfers of a block of genes from one cell to another. These gene transfers, which are usually mediated by plasmids or viruses, do not show a sharp species boundary: they simply become less efficient the greater the evolutionary separation between the donor and the recipient. Prokaryotes therefore have no true species. **E. coli**, for example, is the name given to a range of strains with certain common features and also with a variety of differences — in surface molecules, nutrition, growth rate, sensitivity to inhibitors, and other characteristics. These differences determine the relative Darwinian fitness of various strains for various environments. This consideration is very important for the survival of the kinds of strains being used to create recombinants.

4. **Bacterial Ecology.** Every living species is adapted to a given range of habitats. The set of bacterial strains called **E. Coli**, and closely related pathogens such as the typhoid and the dysentery bacillus, thrive only in the vertebrate gut. In water they survive temporarily, but quickly die out. (Indeed, for that reason the **E. Coli** count of a pond is a reliable index of its continuing fecal contamination.) In the gut there is intense Darwinian competition between strains, depending on such variables as growth rate, nutritional requirements, ability to scavenge limited food supplies, adherence to the gut wall, and resistance to antimicrobial factors in the host. Hence, most novel strains are quickly extinguished in the kind of competition envisaged by Darwin for higher organisms. With bacteria the process is very rapid, because the generation time is as short as 20 minutes and the selection pressures (i.e., differential multiplication) are often intense.

It is easy to demonstrate that the environment in the gut (i.e., type of food and physiological state) plays a decisive role in determining which organisms persist in its normal flora. For example, when a baby shifts from breast feeding to solid food the character of the stool changes dramatically, as lactic acid bacteria, which produce sweet-smelling products, are replaced by **E. Coli** and other foul organisms. Moreover, efforts to reverse the process in adults by administering large numbers of lactic acid bacteria in the form of yogurt have not been successful.

5. **Pathogenicity.** Various kinds of infectious bacteria differ from each other in several respects: **infectivity** (i.e., the infectious dose, ranging from a few cells of the tularemia bacillus to around 10^6 cells of the cholera vibrio); **invasiveness** (i.e., specific **distribution** of the organisms in the body); **virulence** (i.e., the severity of the disease once the infection has overcome natural resistance); and **communicability** from one individual to another. Each of these attributes, like any complex property, depends on the coordinate balanced activity of many genes capable of independent variation.

It is especially important to distinguish the ability to **produce** a serious disease from the ability to **spread.** For example, the tetanus bacillus produces a powerful torin, but it is a normal non-invasive inhabitant of the gut.

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it can cause fatal illness only when it gains access (usually by trauma) to a susceptible tissue, and so a patient with tetanus is not a menace to his contacts.

ESTIMATION OF THE HAZARDS

In turning now to the risks, I would emphasize that it is easy to draw up scary hypothetical scenarios if one's imagination need not be limited by considerations of probability. But any realistic discussion must consider three probabilities: that experiments with a given kind of DNA will produce a dangerous organism, that that organism will infect a laboratory worker, and that the organism will spread in the community or the environment.

1. **Risk of Producing a Harmful Organism.** There is no doubt that molecular recombination **in vitro** could produce pathogenic derivatives of **E. Coli.** For example, if a strain carried the gene for a potent bacterial toxin, and if it were taken up in a large enough dose, the product that it released could cause disease even if the organisms could not multiply in the body. A strain carrying a tumor virus might also be hazardous. However, its production of a pathogenic effect is less certain, as I shall discuss below. Both these kinds of strains are prohibited in the NIH Guidelines today.

I am particularly concerned about restrictions on the so-called "shotgun" experiment, in which one introduces random small fragments of DNA from mammalian cells. As we have seen, this kind of experiment is particularly promising for advancing our understanding of mammalian genes. It is allowed, but it is restricted to the quite expensive P3* facilities. I believe the danger in such experiments has been enormously exaggerated. The mammalian donor cells have a million gene equivalents, and each bacterial recombinant strain would contain at most a few genes. Hence, the probability of isolating a strain with genes for a toxic product or for a tumor virus picked up from normal tissue is exceedingly low.

In addition, I would seriously question whether the products of such experiments represent a truly novel class, which we are the first to create, for it is known that bacteria can take up naked DNA from solution. In fact, two different strains of **pneumococcus** have produced a third recombinant strain in an animal body by release of DNA from a lysed cell of one strain and its uptake by an intact cell of the other. Moreover, in the gut bacteria are constantly exposed to fragments of host DNA, released by death of the cells lining the gut. To be sure, the survival of DNA in the gut is brief, and the efficiency of uptake of DNA by bacteria (especially the kinds found in the gut) is very low. On the other hand, the scale of the exposure in nature is extraordinarily large — around 10^{20} bacteria are excreted collectively by the human species per day. Hence it seems virtually certain that recombinants of this general class have been formed innumerable times over millions of years and are being formed in nature today.

2. **Risk of Laboratory Infection.** Having considered the probability of inadvertently producing a harmful organism, we must now consider the probability that such an organism would cause a laboratory infection. Let us assume the worst case, at present prohibited: an **E. coli** strain producing a potent toxin absorbable from the gut, such as botulinus toxin. Though laboratory contact with such a strain would present a real danger, there are a number of reasons to expect this danger to be less than that encountered with the pathogens that are handled every day in medical laboratories.

(a) In the history of microbiology about 6,000 instances of laboratory infection have been recorded. Moreover, these cases were largely due to various agents of respiratory

*The four levels of containment to ensure optimum protection for those inside and outside the confines of the laboratory run from P 1 (minimal level) for experiments with microorganisms of no or minimal biohazard to P 4 (high level) for those of presumed great hazard or those that might cause serious epidemics. The latter requires a physically isolated building with monolithic walls, all ducts and conduits sealed to prevent escape of microorganisms, strict control of access, air locks for entry of supplies, negative air pressure and directional air flow maintained by a separate ventilation system, and decontamination of exhaust air. — Ed.

infection spread by droplets; and the rate has dropped markedly since safety cabinets were introduced in the 1940s. In contrast to such respiratory infections, enteric infections arise through the swallowing of contaminated food or other material. Hence even the most virulent enteric pathogens are relatively safe to handle with simple precautions.

(b) Strain K12 of **E. coli**, used in all current work with recombinant DNA, has been transferred in the laboratory for over 50 years, and during this time it has altered its surface properties a great deal and has become well adapted to artificial media. The cost has been deadaptation to the human gut: in recent tests with a large dose in man (much larger than what one would expect from a laboratory accident), this strain disappeared from the stools within a few days. Its problems of survival outside the laboratory are analogous to those of a delicate hothouse plant thrown out to compete with the weeds in a field.

(c) The addition of a block of foreign DNA to an organism will ordinarily decrease its adaptation to survival in nature. The contrary likelihood of improving adaptation by such an insertion is obviously all the smaller if the source of the DNA is distant in evolution from the recipient. A pertinent analogy would be that of taking a specialized part from one kind of machine (e.g., an automobile, and expecting it to work well in a very different machine (e.g., a watch).

(d) A very large safety factor is added by the provision in the present Guidelines for biological containment. All work with mammalian DNA must be carried out only in EK2 strains: derivatives of K12 that have a drastically impaired ability to multiply, or to transfer their plasmid, except under very special conditions provided in the laboratory. The presently certified EK2 strain has several stable mutational defects (i.e., gene deletions) that prevent it from multiplying under the nutritional conditions of the gut. But the protection goes much farther and reaches a degree that is unprecedented in the annals of man's exploration of potentially hazardous new materials: **this material has been coded for self-destruction.** For example, these mutant cells require thymine (a constituent of DNA) and diaminopimelate (a constituent of cell wall). Without diaminopimelate the cells can continue to grow and expand but they cannot form more wall, and so they quickly burst. Accordingly, under conditions similar to those in the gut such an EK2 strain not only fails to multiply, but less than 1 in 10^8 cells survives after 24 hours — and it would be an extraordinarily sloppy laboratory accident that would result in ingestion of as many as 10^8 cells.

In addition, while the cells are dying off in the absence of diaminopimelate and thymine, they are severely impaired in their ability to transfer plasmids to other, well adapted cells — and this is the important point for the danger of spreading harmful genes. Finally, not only the cells, but also the plasmids being used to carry recombinant genes are also weakened mutant derivatives, selected for loss of the genes that code for their transmission from the host cell to another cell.

It has been reliably estimated that the probability of such transmission in the gut is far below 10^{-16} per recombinant cell per day.[2]

We thus see that even with a strain known to carry the gene for a potent toxin the production of disease in a laboratory worker would require the compounding of two low probabilities: that the cells will be taken up in large numbers; and that they will survive long enough to cause harm despite their severe disadvantages. Shotgun experiments add still another, very low probability, already mentioned: that the strain will have picked up a dangerous gene from normal mammalian tissue.

I conclude that with the kinds of recombinants now permitted the danger of a significant laboratory infection is vanishingly small compared with that faced every day by medical microbiologists working with known virulent pathogens. And such dangers must ultimately be balanced against the potential benefits. In the United States up to 1961, of the 2,400 recorded cases of laboratory infections 107 were fatal — over half of these

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from diagnostic laboratories. Balancing this cost, millions of lives have undoubtedly been saved by bacteriological research and diagnosis.

3. **Risk of Spread.** We now come to the most important point of all for the public: the difference between the danger of causing a laboratory infection and the further danger of unleashing an epidemic. Let is look at a few facts. In our government's bacteriological warfare laboratories at Fort Detrick, working for 25 years on the most communicable and virulent pathogens known, 423 laboratory infections were seen. Moreover, most of these infections occurred via respiratory transmission, over which control is very imperfect. Nevertheless, **only a single probable case of secondary spread** to a member of the family or to any person outside the laboratory was seen. Similarly, in the Center for Disease Control of the United States Public Health Service 150 laboratory infections were recorded, with only one case of transmission to a family member. Elsewhere in the world about two dozen laboratory-based microepidemics have been recorded — and each involved at most a few outsiders.

With enteric pathogens the danger of secondary cases is minimal, for with this class of agents modern sanitation provides infinitely better control than we can provide for respiratory infection: the appearance of a case of typhoid, in contrast to that of influenza, does not lead to an epidemic. Enteric epidemics appear only when sanitation is poor, or when a symptom-free carrier with filthy personal habits serves as a food handler; and such epidemics are always small (except when sewage freely enters the water supply).

This information is clearly pertinent to recombinants in **E. coli**; for despite widespread apprehension over the presumed production of biparental chimeras with totally unknown properties, the fact is that the recombinants envisaged are all genetically 99.9 per cent **E. coli** with about 0.1 per cent foreign DNA added. Through such addition the organism could be made more toxic, but it could not conceivably be given a radically expanded habitat, no longer confined to the gut. It is even harder to see that the organism would be more communicable or more virulent than our worst enteric pathogens, which cause typhoid or dysentery. The Andromeda Strain remains entertaining science fiction.

I conclude that if a recombinant strain should be toxic, and if it (or a recipient of its plasmid) should cause a laboratory infection, that infection would give an early warning. Moreover, the enteric habitat of **E. coli** combined with modern sanitation provides powerful protection against the chain of transmission required for an epidemic.

Tumor viruses present a special problem. Any conceivable infection by a bacterium containing such genes would have a long latent period before disease could appear, and so we would lack an early warning. However, this loss of one protective feature is balanced by the fact that viruses by definition have their own means of spread. Indeed, in general the natural spread of viruses is even more effective than that of bacteria, for each infected animal cell produces thousands of infectious virus particles, while each bacterium produces two daughter cells. Moreover, since viral DNA in a bacterium would have to get out of its host cell and into human cells through an extremely inefficient process, it is hard to imagine that DNA in a bacterium would be more hazardous than that same DNA in its own infectious viral coat, adapted by evolution for entering animal cells.

In the light of all these considerations, we must reassess the dangers from **E. coli** recombinants. I believe the risk of laboratory infections is real, though very small; and the problem of minizing that risk should concern those involved with such laboratories, just as with laboratories dealing with known pathogens. I also believe that investigators have the right to take such risks for themselves, as they do daily in working with pathogens (including such unknowns as the agent of "Legionnaire's Disease"). But we have seen that by any reasonable analysis the risk of producing a serious epidemic is very much less than the risk from pathogens that are being cultivated in laboratories all the time. **I therefore see no realistic basis for public anxiety over this issue,** any more than over the way laboratory work on known pathogens is being conducted.

4. **The NIH Guidelines.** In the face of the alleged dangers that have been so vividly portrayed by doomsayers and seized on by the media, I cannot blame the public for having a high level of anxiety. And I would regard the present Guidelines as a reasonable response to that anxiety. On the other hand, in the light of the technical realities discussed above, I would regard these Guidelines as excessively conservative. This is especially true of the experiments with mammalian DNA.

The Guidelines contain a provision for periodic revision; and since these revisions (or the nature of any future legislation) will depend on public attitudes, as well as on the results of actual experience with the organisms, there is need for a great deal of public education about the relevant scientific facts and principles.

INTERVENTION IN EVOLUTION

The hazard of creating novel dangerous organisms is a legitimate cause for public concern: there is no question about society's right to limit **activities** that may harm others. However, when Doctors Erwin Chargaff and Robert Sinsheimer ask whether our increasing power to manipulate genetic material creates long-term evolutionary dangers, they are introducing quite a different kind of question, involving the concept of dangerous **knowledge** rather than dangerous actions. Perhaps the traditional answer of scientists to this question — based on the principle of freedom of inquiry — is no longer valid, because the power created by our new knowledge also creates a new moral issue. But the seriousness of that issue depends on the validity of assumptions about the magnitude of our new power, and evolutionary principles may throw light on these assumptions. In particular, Doctor Sinsheimer questions our right to breach the barrier between prokaryotes and eukaryotes, since we simply cannot foresee the consequences. This argument seems to turn evolutionary principles upside down. Evolution is based on selection for fitness in the Darwinian sense. The barriers that it has established between species have evolved because they avoid wasteful unfit matings, i.e., matings whose products would be monstrosities unable to survive, rather than monsters able to take over. Since survival of an organism depends upon a balanced genome, it is not surprising that evolution proceeds in small steps, which will not excessively unbalance the genome in one respect while improving its adaptation in another. And since for this reason even closely related species cannot form hybrids in nature, it is exceedingly unlikely that artificial transfers of genes between the most distant organisms would pass the test of Darwinian fitness.

In a more general argument Doctor Sinsheimer questions whether power over nucleic acids, as over the atomic nucleus, "might drive us too swiftly toward some unseen chasm. We should not thrust inquiry too far beyond our perception of its consequences." I would paraphrase this statement and suggest that we should not thrust our limitations on research too far beyond our perception of its hazards. Otherwise, those who oppose the research will be trying to play the role of God (or of his representative). The analogy to the drama of Galileo and Urban VIII is uncomfortably close: for the mystical quality of the current argument suggests that the core issue is whether man's possible interference with evolution is not blasphemous.

Perhaps the most significant long-term concern is not over evolution in general, but over the ultimate extension of genetic engineering to man. Here, in contrast to the vagueness of the preceding propositions, we come to something concrete that one can wrestle with. And I would emphasize that recombinant DNA research is no more radical a step toward genetic engineering in man than are many other steps which have aroused no such public terror. These include the isolation of a gene, its chemical synthesis, the cultivation of human cells, the use of viruses to incorporate genes into those cells, and the achievement of genetic recombination **in vitro** between human cells and other animal cells.

The prospects of genetic engineering in man received extensive discussion in 1970 and then subsided. However, since the question has been reactivated by the very different question of genetic engineering in bacteria,

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1 Dornfeld L, Kane R. Metolazone in essential hypertension. The long-term clinical efficacy of a new diuretic. *Curr Ther Res* **18**: 527-533, 1975

2 Data on file, Medical Department, Pennwalt Prescription Products

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Swimmer's Itch - A Rhode Island Malady

Malady Caused By Marine Trematode Can Be Contracted In Rhode Island Waters

By Paul Kravitz, M.D.
Mark Lewis, M.D.

The Ocean State is blessed with a beautiful and accessible shoreline. Much of this access to the ocean is along Narragansett Bay with its numerous inlets, coves, and rivers. In these areas unsuspecting vacationers swimming, wading for quahogs, or surfcasting may contact the highly bothersome "swimmer's itch."

"Swimmer's Itch" (also clamdigger's itch) is produced by certain tiny worms which are parasitic to birds. These worms, Austrobilharzia variglandis, are found in Rhode Island and throughout the northeastern coast of the United States. The larvae are known as cercariae, which are 600 microns by 73 microns in size. The natural hosts of this parasite are wild birds, such as ducks, gulls, and pigeons. The life cycle of cercariae is not too dissimilar of that of the schistosome. (Fig. 1).

PAUL KRAVITZ, M.D. and MARK LEWIS, M.D., *members of the Department of Medicine, Division of Dermatology, Roger Williams General Hospital, Providence, RI*

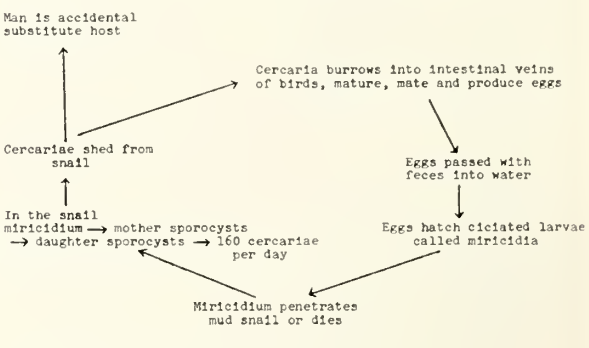


Fig. 1. Life Cycle of Cercariae.

After several minutes of exposure the cercariae superficially penetrate the skin of man. After penetration the larvae die. During this first exposure usually no tissue reaction occurs. With sensitization to the proteins of the cercariae, symptoms become more severe with successive exposure. Intensity of the reaction may depend on the number of cercariae penetrating the skin. Severe pruritus and cutaneous burning develop within minutes. There is



Fig. 2. Anterior chest of teenage boy showing numerous pruritic papules.

a wide variation in individual reactions. Sometimes hours, days, or weeks may pass before symptoms develop. Delayed hypersensitivity is probably responsible for this. Those with previous exposure develop more severe attacks. Dermatitis results from invasion by the organism, secondary cellular responses, and rubbing or scratching by the patient. Erythematous wheals, papules resembling insect bites, tiny clear vesicles or excoriations may all be seen. Biopsy of lesions rarely reveals the parasite. Histology is nonspecific showing a dense, patchy, mononuclear cell infiltrate with many eosinophils. Blood eosinophilia may develop. Secondary infections are common. Any exposed skin may be involved. Infrequently skin covered by the bathing suit may also be affected. Low grade fever in children has been reported. Symptoms are self-limited, usually resolving in one week. Cases have been reported in Wickford, Great Salt Pond, Nausauket, Warwick Neck, and Seekonk (Figs. 2-4).

Washing off contaminated water and immediate drying after exposure may completely prevent infection. Treatment of swimmer's itch is aimed at relieving symptoms. Sedation, antipruritics, and emollients provide relief. Secondary infection requires antibiotics. Rarely are systemic steroids necessary.

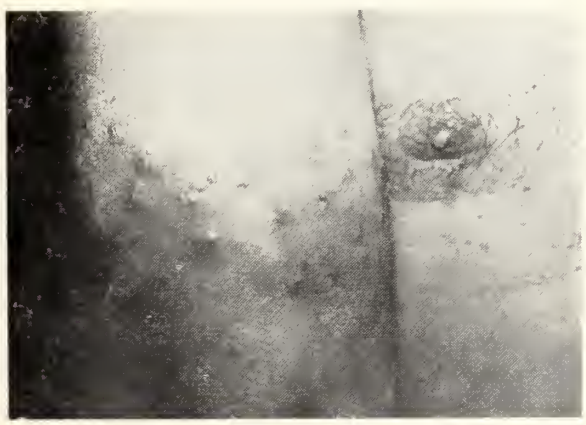


Fig. 4. Vesicular-pustular lesions on extensor elbow with secondary infection.

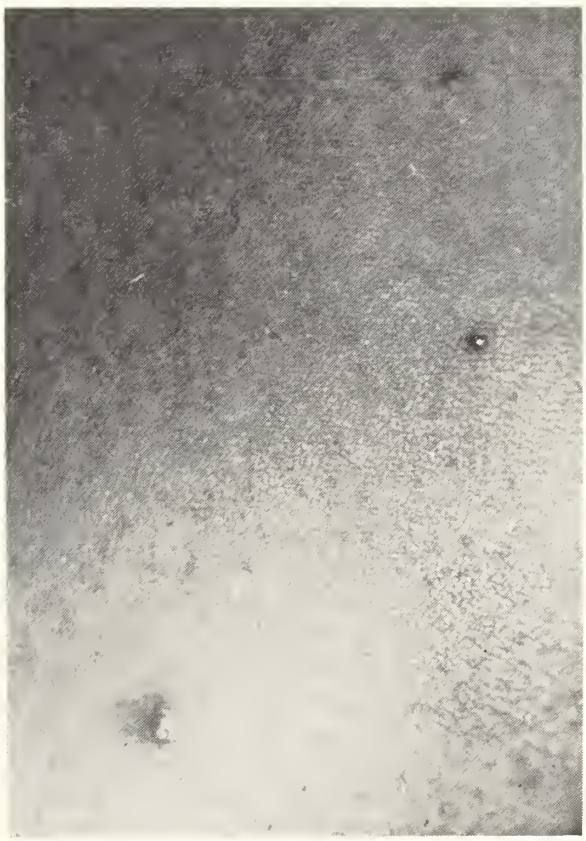


Fig. 3. Close-up of papular-vesicular lesions on the thigh of a young woman.

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A Home Program For Improving Voice And Speech Quality Of Infants With Repaired Cleft Palate

High Success Rate Is Attained Without Direct speech Therapy

By J. Barry Regan, Ed.D.
Armand Versaci, M.D.

Remediation of voice and articulation problems resulting from a cleft palate has not achieved a satisfactory level of success. Therapy has been long term[10] and results frequently disappointing. Successful surgery, that is a visually adequate palatal structure, does not seem to insure acceptable voice and speech production. Although age of surgical management and type of cleft seem related to adequacy of postoperative communication skills,[5,10] a substantial number of hypernasal voice and articulation problems remain.[1,5]

Therapeutic interest in the past was centered on physical exercise in an attempt to strengthen the musculature necessary for velop haryngeal competence. It was routine for surgeons and speech clinicians to recommend various blowing exercises to increase velar function.[10] Although Van Riper[8] and Morley[3] still advocate a limited use of such non-speech exercises, most feel that the lack of a positive relationship between blowing and vocal behavior during speech renders such exercises relatively ineffective.[2] More recently, interest has centered on articulation as the major therapeutic tool. The rationale seems to be that if surgery can develop an adequate appearing velopharyngeal structure, that structure should be capable of creating acceptable voice and speech. Thus, any remaining speech errors should be considered as functional and treated by direct speech therapy.[5] The assumption that elimination of the physical abnormality removes the effect of physical causative factors seems questionable and perhaps one reason why articulation therapy in our Center has been disappointing.

In an effort to develop a more effective approach, it was hypothesized that perhaps the cleft palate was normal for that individual and surgical intervention was a disruption of previously established motor pathways. Thus, the repaired palate, rather than representing "normal" structure, may in reality represent an abnormal structure for that person. Rehabilitation efforts designed to alter or

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change the basic or continuing response of any body structure would almost certainly require a period of transition composed of exercise and other measures to retrain disrupted muscular coordination as an integral part of the rehabilitation program. Voice and speech retraining of the child with a repaired cleft of the palate, lip, or both would seem to be no exception. If, therefore, acceptable voice and speech is anticipated, therapy should include retraining of disrupted motor pathways to facilitate adequate closure, especially since there is an abundance of research[1,3–5,7,9,10] indicating that considerable velopharyngeal closure is necessary for normal articulation of consonants.

PROCEDURE

To test the hypothesis that retraining of the repaired cleft palate through exercise would be helpful to velopharyngeal closure and appropriate voice quality, a program of straw sucking was formulated. The premise was that a vacuum in the oral cavity was necessary to draw liquid up a straw. Such a vacuum could be achieved only by adequate closure of the repaired palate. Thus, if children could be taught to drink from straws immediately after palatal surgery, helpful exercise of the repaired palate would occur.

Subjects were forty-five children with varied clefts of the palate, lip, or both referred successively by a practicing plastic surgeon after completion of corrective surgery. Mean age at initiation of the study was 19.8 months and at termination of the study 6.9 years. Only children requiring secondary surgery, such as pharyngeal flap, were eliminated from the study.

All parents were seen for one-half hour for explanation and instructions necessary for implementation of straw sucking. Once the process was learned, parents were instructed to provide all liquids to the child through a straw. A commercially available "Sip-It" cup was found most satisfactory for this program. The parents were responsible for enforcement of the procedure with each child re-evaluated only twice per year until completion of the study.

The program was evaluated by (a) asking the parents to complete a questionnaire designed to determine their feelings about their child's voice and speech adequacy and (b) a four point professional listener rating scale designed to estimate voice and speech acceptability based on a substantiated speech sample as described by Moll.[5] Listeners were two skilled speech clinicians and one layman; none were conversant with this study.

RESULTS AND DISCUSSION

Twenty-nine of the forty-five children were available for final communication analysis. Of the twenty-nine, two would not talk. Of the remaining twenty-seven, speech and voice were judged adequate in all but four instances. There was no disagreement in the independent judgement of the professional listeners on the twenty-three judged adequate and only minor disagreement on the four judged inadequate. Parental judgements were in agreement in all but four instances. Of the children judged as adequate only one had minimal therapy. Thus twenty-two, or 81.5 per cent, attained adequate speech with no therapy other than provided through our program of exercise.

Four, or 14.8 per cent, were judged as not having adequate communicative skills and required significant additional therapy. Of those judged adequate, four had a cleft of soft palate only, nine had a cleft of soft and hard palate, one had a cleft of soft and hard palate and alveolar ridge; four had a complete unilateral cleft; one had a cleft of the hard palate, soft palate, and lip (not involving alveolar ridge); and five had a complete bilateral cleft. Of those whose speech was judged not adequate, one had a cleft of the soft palate, two had a cleft of the hard and soft palate, and one had a complete bilateral cleft.

As speech therapy usually begins during the first grade and mean subject age at time of study completion was 6.9 yrs., it seems appropriate to state that 85 per cent of the children of this study attained acceptable speech at an unusually young age without the investment of time and effort usually anticipated in treating this type of case.

CONCLUSION

A parent-oriented home exercise program designed to improve voice and speech in a

(Continued on page 409)

An Analysis Of Controlled Substances Rx Forgeries In Rhode Island

Prescription Blank Security Is An Important Element In Combating Forgeries

By Robert W. Pollock, M.S., R.PH., Norman A. Campbell, J.D., Ph.D., R.PH., *and* Charles Hachadorian, Jr., M.P.A., R.PH.

Drug abuse and related problems are well known to practitioners in the health care professions and to law enforcement officials. The United States Congress, state legislatures and numerous federal and state agencies have attempted for years to resolve the problems of control. In time, the Executive Branch of federal government also became involved in reform. The approaches to control of drug abuse have been numerous.

Research conducted with the assistance of a Fellowship from the American Foundation for Pharmaceutical Education

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In 1914 Congress passed the Harrison Narcotics Act, relying upon the stamp tax provisions, special order forms, and record-keeping provisions to control narcotics use and distribution. The Treasury Department Bureau of Narcotics waged the battle for decades. In 1937 an amendment to the Harrison Act added marijuana to the list of controlled substances. In 1965, motivated by growing concern about drug abuse throughout the country, the federal Food, Drug, and Cosmetic Act of 1938 was amended to control amphetamines, barbiturates, and certain other "abuse drugs." The Drug Abuse Control Amendments (DACA) provided for a new, special bureau in the Food and Drug Administration, the Bureau of Drug Abuse Control (BDAC). Nevertheless, the "drug problem" seemed to grow. By executive order President Lyndon B. Johnson responded in 1968 by abolishing the Treasury Department's Bureau of Narcotics and the Bureau of Drug Abuse Control. The Bureau of Narcotics and Dangerous Drugs (BNDD) was created and placed in the Justice Department, a shift to affirmative enforcement.

The problem continued, and recognition of the need for even more federal attention

brought about passage of the Comprehensive Drug Abuse Prevention and Control Act of 1970. Throughout this period and subsequently, when the BNDD and some related agencies were combined and reorganized in 1973 as the Drug Enforcement Administration (DEA), physicians expressed concern about their own duties and roles in the enforcement and control scheme.

The medical practitioner must be aware in his or her daily activities of the health needs both of those who request prescriptions for genuine medical purposes and those who seek to obtain controlled substances by misrepresentation, subterfuge, or forgery. This study was conducted to gather and analyze data to gain an insight into the prescription forgery problem and the forgeries themselves.

METHODOLOGY

The State of Rhode Island Department of Health Division of Drug Control (DDC) maintains a file of detected, "non-prosecuted" (no conviction or action taken against passer) forged prescriptions. This file was searched for prescriptions presented during the 5½ year period from June 1967 through December 1973, and data were recorded for those forgeries ordering drugs categorized as controlled under Title II Controlled Substances Act (CSA) of P.L. 91-513, The Comprehensive Drug Abuse Prevention and Control Act of 1970. Information was collected to determine: date the forged prescription was presented to the pharmacy for filling; dosage form; strength and quantity of medication; therapeutic classification according to **The Physicians' Desk Reference**; type of pharmacy where presented (i.e. independent or chain); geographic location at which passed; alleged prescriber's name, address, BNDD (DEA) number and match if applicable; and any unusual features noted by the researcher.

The forged prescriptions studied were detected by the pharmacists either in advance of filling, thus thwarting a successful passed forgery, or ex post facto upon receipt of subsequent notification of similar discoveries periodically by the DDC and distributed to all pharmacies in the state.

Data generated were recorded, tabulated, and analyzed in an effort to determine prescribing patterns. Since the CSA and its new control and enforcement provisions became effective during the time period covered by the file of forgeries, an effort was made to determine what, if any, effect this act had upon the illicit ordering of controlled substances via forged prescription. (N.B. The inclusive dates predate the enactment and effective date of the Rhode Island Controlled Substances Act. All references are to the federal statute only.)

TABLE I
DISTRIBUTION OF FORGERIES WITHIN THERAPEUTIC CLASSES

	# Rx	# Dosage Units
Analgesics:		
Percodan®	56	1309
Dilaudid®	34	979
Numorphan®	24	609
Demerol®	22	421
Dolophine®	5	140
Daprisal®	4	180
Morphine®	3	96
Edrisal® with Codeine	2	40
Anorexics:		
Obedrin-LA®	84	3395
Desbutal®	31	1725
Dexamyl®	15	1245
Biphetamine® 20 & T-20	9	254
Eskatrol®	8	177
Dexedrine®	6	390
Desoxyn®	4	180
Obedrin®	3	200
Syndrox®	2	180
Preludin®	2	110
Bontril® #2	2	60
Ambar® #2	1	100
Antidiarrheals:		
Paregoric	2	96
Psychostimulants:		
Ritalin®	1	30
Cough Preparations:		
Hycodan®	11	504
Cough and Cold Preparations:		
Hycomine®	56	2568
Robitussin-AC®	28	1212
Tussend®	16	684
Scotussin Forte®	6	276
Sedatives:		
Seconal®	35	1087
Tuinal®	9	300
Nembutal®	8	310

Source: Data Collection

The DDC had in its non-prosecuted prescription forgery file 489 forged orders passed or presented to Rhode Island pharmacies during the test period which met the "controlled" criteria under the CSA.

Table I shows the distribution of forgeries within therapeutic classes. Individual drugs

(Continued on next page)

and drug products within the seven categories are also presented, including the number of occurrences and the total number of dosage units for that drug or product. The most frequently occuring forgery was for Obedrin-LA® (anorexic)-84, with Percodan® (analgesic)-56 and Hycomine® (cough & cold)-56 ranking next in number of orders presented.

TABLE II
SUMMARY OF FORGED PRESCRIPTIONS
THERAPEUTIC CLASS

Therapeutic Class	# Rx	Tot. Doses	X Doses/ Rx
Analgesics	150	3774	25.2
Anorexics	167	8016	48.0
Antidiarrheals	2	96	48.0
Psychostimulants	1	30	30.0
Cough Preparations	11	504	45.2
Cough and Cold Preparations	106	4740	44.7
Sedatives	52	1697	32.6
Totals	489	18857	38.6

Source: Data Collection

In Table II data summarizing the distribution of forgeries by therapeutic class are presented. Anorexics, analgesics, and cough and cold preparations were the leading classes of forgeries in terms of orders presented. Anorexics also lead the list in terms of the total doses ordered.

It would appear from these data that forgers write for quantities within ranges generally considered usual by practice standards and legal limitations in order not to arouse the pharmacist's suspicions.

TABLE III
TIMING OF FORGERY
RELATIVE TO EFFECTIVE DATE OF C.S.A.

Therapeutic Class	Before	After	N/A
Analgesics	112	36	2
Anorexics	99	61	7
Antidiarrheals	0	2	0
Psychostimulants	0	1	0
Cough Preparations	1	9	1
Cough and Cold Preparations	66	37	3
Sedatives	38	14	0
Totals	316	160	13

Source: Data Collection

Table II provides a view of the distribution of forgeries by therapeutic class and separated into those passed prior to the effective date of the CSA, P.L. 91-513, and those presented after the May 1971 date. The two time periods are not equal, forty-six months comprise the "before" period and 31 months the "after"' period. Therefore, the 2:1 before/after ratio is somewhat distorted, since the "before" figure includes forgeries passed during an extra 15 month period. Any conclusions drawn from these data must reflect this variation.

The average number of forged prescriptions (Rx) presented or passed during the period prior to the effective date of the CSA was 6.86 Rx/month, while the data for the later period show 5.16 Rx/month. Assuming that the detection capability remained the same, these data appear to show a 24.8 per cent reduction in passing of forged prescriptions. In any case, the monthly rate decreased by approximately 2 Rx/month.

TABLE IV
INDIVIDUAL PRODUCT COMPARISONS
RELATIVE TO C.S.A. DATE

	Before*		After**	
	# Rx	# Doses	# Rx	# Doses
Cough Preparations:				
Hycodan®	1	48	9	408
Sedatives:				
Seconal®	29	940	6	147
Tuinal®	2	60	7	240
Nembutal®	7	210	1	100
Antidiarrheals:				
Paregoric	0	0	2	96
Psychostimulants:				
Ritalin®	0	0	1	30

*46 month period
**31 month period

Source: Data Collection

Table IV shows some individual product comparisons before and after the CSA effective date. It is noted that some products, paregoric and Ritalin,® which previously were not as stringently controlled, did not appear on the forgeries list prior to passage of CSA. However, when added controls were imposed, forgeries for these items began to appear. For sedatives, however, there was a dramatic decrease (—54 per cent) in forgeries after CSA. This time period also coincided with the shift to a more stringent schedule II from the less stringent schedule III.

It appears that, as freer supply was "cut

off," forgeries increased. However, increased control in the face of the same illicit mechanism appeared to have a deterrent effect on forgery.

TABLE V
MULTIPLE FORGERY PASSAGE

# of forgeries passed	# of occurences	# of Rx involved
2	28	56
3	3	6
4	8	32
5	5	25
6	3	18
7	5	35
8	2	16
9	1	9
18	1	18
41	1	14
Totals	56	256

Source: Original Data

Further, during the study period multiple forgery passings by a single person ranged from two to forty-one times, with the overall mean among the multiple passers being 4.57Rx. Fifty-six persons accounted for 256 of the total of 489 prescriptions. Data suggest that forgers are more often multiple passers. (Table V).

TABLE VI
OCCURENCE OF MULTIPLE PHYSICIAN BLANK

# of blanks discovered	# of physicians	# of forgeries accountable
1	50	50
2	40	80
3	9	27
4	8	32
5	8	40
6	3	18
7-10	8	68
11-14	4	48
15-41*	4	101
Totals	134	464**

*includes one each 15, 21, 24, 41
**25 blanks were either hospital or clinic blanks wher the physicians name was indiscernable

Source: Original Data

As illustrated in Table VI, lack of security of the vehicle for forgery, the physician and hospital prescription blanks, is a substantial part of the forgery problem. During the study period prescription blanks from 134 physicians (7.5 per cent of all physicians, MDs and DOs licensed in the state) found their way into the forgers' hands.

Fifty physicians' blanks appeared but once. The remaining 84 physicians' blanks accounted for 414 forgeries, an average of 4.9 blanks per physician. Closer observation reveals that 20 per cent, or only 27 physicians, had five or more blanks stolen and used, which accounted for 275 forgeries (59.3 per cent).

Lack of adequate security of prescription blanks in the physician's office must be considered to be a major factor in the forgery problem. Security of hospital blanks is of concern to both hospital pharmacists and administrators. The hospital prescription blank bears no inscription of the physician's name or address. A blank bears no inscription of the physician's name or address. A state statute requires the prescriber both to print his name on the blank and to place his signature. This is a difficult item of contention for the community pharmacist who, usually unfamiliar with hospital interns and residents, has difficulty in verification of the prescription, if the signature is unclear. For this reason it is sometimes impossible to track down a physician to check the authenticity of a prescription.

Twenty-three forgeries were on hospital blanks. In 11 of these (48 per cent) physicians' names were not identifiable, so that the pharmacist was uncertain of the physician's name. There were also six welfare prescription forms in the study.

As might be expected, most forgeries were presented or passed in community pharmacies in the major metropolitan areas of Rhode Island. Three hundred and forty-two (70 per cent) of these were passed in Providence and Kent Counties, the state's two most populous in terms of both residents and community pharmacies. These counties also are noted to have the highest crime rates in the state (Table VII).

Finally it was observed that 121 of the forgeries were presented or passed in chain store pharmacies. Though only about 15 per cent of the pharmacies in the state are chain stores, their highest concentration is in the major metropolitan areas.

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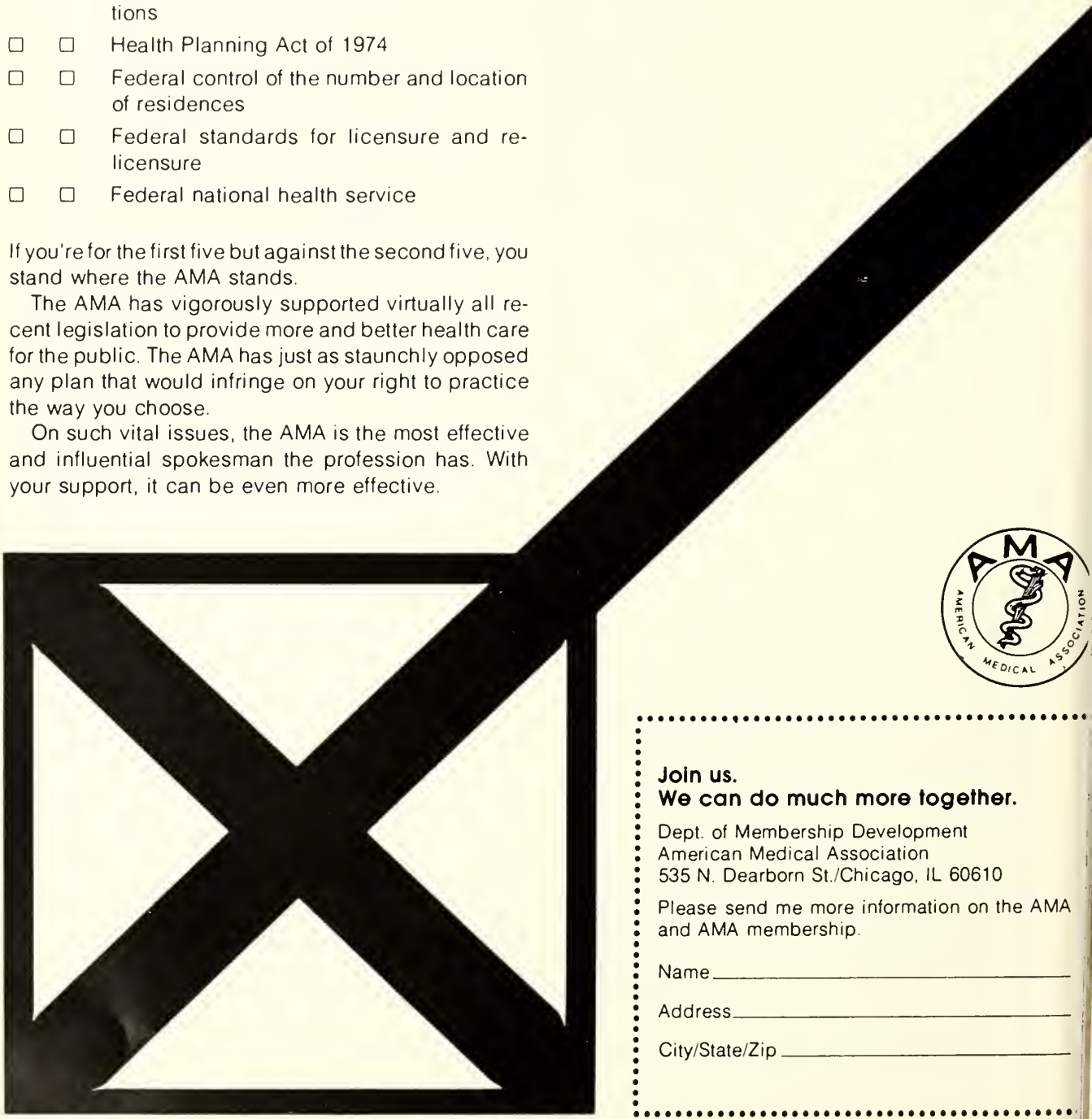
Where do you stand on these issues?

Pro	Con	
☐	☐	Maternal and child care programs
☐	☐	Federal aid to medical students
☐	☐	Extending private health insurance to everyone
☐	☐	Nationwide program of community emergency medical services
☐	☐	Reform of the tort system of malpractice adjudication
☐	☐	Maximum Allowable Cost (Drug) Regulations
☐	☐	Health Planning Act of 1974
☐	☐	Federal control of the number and location of residences
☐	☐	Federal standards for licensure and relicensure
☐	☐	Federal national health service

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Physicians' Role In Today's Ever-Changing Society Is Complex And Challenging

By Herbert F. Hager, M.D.

In April of 1941, when I began service in Rhode Island as a house officer, my family surgeon was the president of this medical society. His presidential address that spring summarized the previous 35 years of surgical and medical progress. His address, given at the end of an era, serves as a reminder of days and things gone by.

There was minimal government involvement in medical care other than staffing the various corps needed to provide direct care to those who were the responsibility of government. The National Health Act introduced into Congress in 1939 had been laid to rest. Government control of health and medical care by law and regulation, rather than by employment, was yet to come. The war years that followed were the prelude to a new era, a great renaissance in all the sciences. The biological and medical sciences, benefiting from the other disciplines, joined in a great explosion of basic and applied knowledge. Rhode Island physicians as a result are now part of the greatest medical research, educational, and medical care delivery system the world has ever seen.

Along with the progress came increased costs, as the diagnostic and therapeutic tools became complicated and sophisticated. Hospitals had to replace unskilled labor with highly trained technicians, technologists, and personnel holding doctorates and other degrees and certificates in the ancillary medical and health care fields. The public became more concerned with costs, as care became more valuable.

No one wants to be sick, and no one wants to pay for sickness. Prepayment, particularly if it is a tax free benefit, paid for by the employer, has become the least obnoxious way of financing the costs of health care. We must be content to be a fringe benefit if we accept the third parties as our collection agents.

LIFE EXPECTANCY

Has changing the method of payment for care changed the health and life-expectancy of the population? In studying the lifetables we see that life expectancy has increased dra-

(Continued on next page)

Read at the 166th Annual Scientific Assembly of the Rhode Island Medical Society on May 11, 1977.

HERBERT F. HAGER, M.D., *President, Rhode Island Medical Society,* 1976-1977

matically, largely because of the improvement in infant mortality. We have had a chance to observe a full decade of Medicare, a national health insurance program for those over 65 years of age. In 1966 before the advent of the program, 65 year old males had a life expectancy of 12.8 years and females 16.2 years.

In 1975, ten years later, life expectancy had increased for the 65 year old male to 13.7 years, an increase of 0.9 of a year, and females to 18.0 years, or an increase of 1.8 years. The program has cost billions of dollars, but were those added years the result of that expenditure? Other elements must be considered, such as progress in sciences, improvement in medical and surgical care, better socio-economic factors, better sanitation and nutrition, and better nursing home care. People have had more leisure, better transportation, and yes, even better parking to assure access to medical care. In the decade the number of Medical Schools in the United States increased from 88 to 114. The number of active physicians increased by 65,000 and there are now about 12,000 added each year. No one knows for sure since the reasons for increased life expectancy, but all involved will take credit for it. Certainly as the average life expectancy reaches man's biological life expectancy there will be a diminishing return for larger expenditures. How much will we be willing to pay for one more day or one more hour of life?

Through the years the subject matter of the medical society's meetings has changed gradually from discussions of disease and therapy to discussion of government intrusion and regulation of the profession. Your medical society is organized and ably staffed to serve the physician and the public in the ongoing struggle with bureaucracy.

THE RHODE ISLAND MEDICAL SOCIETY

The past year for the Rhode Island Medical Society was a year of implementation of the many rights and duties assigned to it. The Staff, the Council, the House of Delegates, and the many committees worked long and uncounted hours. Members of the Society have contributed their time and expertise to state commissions and to the corporations and boards of directors of professionally related local, regional, and national organizations. These efforts must be continued and will be required on future boards such as the State-Wide Health Coordinating Council.

In the name of the Medical Society, I thank all of those physicians and the Staff for their generosity and public spirit.

The Rhode Island Medical Society has attracted to its membership in the past year more physicians than ever before. Today we have voted to welcome student physicians and graduate physicians who may choose to join us without the requirement of licensure. Some of these may later become our colleagues in clinical practice, or pursue academic, administrative, or research careers. Some may leave Rhode Island to carry with them what we hope will be more than a data base of medical science, but also a compassionate approach to patient care and the knowledge of the support they can receive from their fellow physicians.

The Society is organized to help the impaired physician through our Physician's Committee and to protect the public from the occasional but rare incompetent or unscrupulous medical care provider. Voluntary mediation services are available or, when necessary, the compulsory board of Medical Review.

LEGISLATION

The Medical Malpractice Act passed in the 1976 General Assembly has not yet been tested but still appears to be one of the outstanding professional liability laws in the United States.

A bill to extend the benefits of the law to the incorporated physician was introduced by the Society, and the officers of the Society are well aware of the possibility of further improvements in this law by future amendments to the Act.

The Society has provided the Superior Court with a roster of those volunteer physicians who will provide expertise to the various mediation panels which will be convened to hear medical liability allegations. It is the hope than through this mechanism the costs of professional liability can be decreased, frivolous claims can be quickly eliminated, and fair judgment provided to those inadvertently or wrongfully injured.

The Rhode Island Medical Society has implemented the prescribed course in continuing

education mandated by law for triennial relicensure, as well as the standards and methodology for certifying it. Progress has been made toward accreditation of the hospitals throughout the state as sponsors for continuing medical education programs leading to the American Medical Association's Physician's Recognition Award.

Our premiums for professional liability this year through the Medical Malpractice Joint Underwriting Association have been reduced. Whether this trend can be continued in spite of the realities of inflation is not predictable.

The Public Laws Committee monitors bills that are introduced and, in conjunction with our legislative council, aids the legislature in arriving at decisions in the formative stages rather than urging defeat or passage of bills already formulated. State laws of the past year and those of the future will impact more on Rhode Island medical practice than will the federal laws. Our state legislative program this year attempted to secure legislation to improve the confidentiality of patients' records and to institute health education into the classrooms of the elementary and secondary grades. We fought to preserve the freedom of physicians to practice in the location of their choice and the right to equip their offices with the most modern equipment from private capital.

Satisfactory resolution of the problem of a single regulatory definition of death rather than a statutory one has yet to be accomplished. The concept of a "brain death" rather than a "cardio-pulmonary death" must be acknowledged or programs of tissue and organ transplantation cannot continue or advance. Graft recipients, whose lives may be saved, cannot be provided with suitable viable transplants until the physicians, as well as the donors, are legally and ethically protected. Specific regulations can be formulated to safeguard the donor from a wrongful death. The physician who removes viable kidneys from a victim of a bullet wound in the brain cannot be charged with murder while the gunman goes free.

MEDICAL JOURNAL AND LIBRARY

The Society is on an improved financial foundation with restoration of our previously depleted reserve funds. The **Rhode Island Medical Journal** has been improved and is no longer in its previous deficit position.

The Medical Library of the Society has undergone internal changes resulting in economies of space and substance. It should continue to be an asset and not an unbearable financial burden in the immediate years ahead. It serves as a resource for hospital and other medical libraries in the state.

Rhode Island is a physician-rich state, ranking seventh in the United States in the number of physicians per 100,000 population, and that percentage is growing rapidly so as to exceed the number thought desirable by the Carnegie Foundation. Physicians' services have been accessible, of high quality, and available at reasonable cost. There is no real shortage in the various specialties, but in some fields, such as ophthalmology, the number available may be less than optimal. It is impractical to talk of geographic maldistribution in an area so small that a twenty minute ride can bring any resident to a tertiary hospital facility. Because of these characteristics, there has not been the need here to provide any significant number of physician-extenders to supplement the normal distribution of doctors of medicine in under-served or rural areas.

The Blue Cross-Blue Shield plans have enrolled nearly 90 per cent of the eligible population, The remainder are nearly all served adequately through Medicare, Medicaid, other insurance companies, or self-insurance. The Rhode Island Catastrophic Health Plan (CHIP) is further protection for the individual against uninsured, excessive loss from medical and health care expenditures.

COST OF MEDICAL CARE

What does the politician and legislator have to complain about or to offer the Rhode Island public? Their battle cry is now not based on altruism, or how much more health care the public should receive, but "cost containment" and "improved quality" of services, medications, and devices. Such programs are sure to rally a multitude of supporters. Unfortunately, their goal, which we might all espouse, is not easily attainable, and supporters for one route or another hold many false ideas or speak half-truths. Many basic tenets

(Continued on next page)

in economics cannot be applied to health care. Supply and demand do not determine the price when the demand is infinite and the supply must always be finite. **Health** care is one of the three largest industries in the United States and employs some 4.5 million individuals. **Medical** care is a small portion of that industry and employs only some 345,000 physicians. The estimated percentage of the health care dollar that the Rhode Island physician receives is only 14.2 per cent and is decreasing. In the Rhode Island Medicaid program the physician receives only 10¢ of each dollar spent. The cost of medical care cannot be decreased by increasing the number of doctors, for, with insatiable demand, each physician easily works full time. The employment of less expensive physician-extenders has not cut down the demand for physicians and has only added another group of health care providers. Each one of these also easily attracts large numbers of patients seeking consolation, less morbidity, or immortality.

It has been well established that it is not the individual income of the physician that must be contained, but those costs that he generates in the use of expensive equipment, hospitalization, medications, devices, and treatments involving the many ancillary health care providers. It has been estimated that each physician generates or influences some $250,000 in costs each year. Why then the false theory that more medical schools, larger classes, and thus more physicians, each advertising his credentials, will produce competition, and that competition will decrease the cost of medical and health care?

The cost can be decreased only by rationing services and material. It would not lower the costs to have services paid for by taxes, rather than by premiums. In fact, in every known model, when government has financed health care, the costs have escalated five-to ten-fold. When the government attempts to decrease its military budget, it decreases the number of personnel and closes installations. When attempting to decrease costs in health care, the proposals involve decreasing the number of hospital beds, hospitals, and other expensive facilities.One mechanism will be the requirement of "Certificates of Need" and "Regionalization" of specialized services and equipment. Doing this has not decreased total costs for with fewer beds and more rapid turnover, there is a tendency to add more expensive auxiliary services and equipment, involving an increase in Total Hospital costs.

Progress in the application of new technology and techniques to the practice of medicine will be seriously hampered if through "certificates of need" private capital is restricted and physicians cannot purchase modern buildings and equipment or practice in the locations of their choice.

We have been belabored as an inefficient "cottage industry," but are in danger of becoming a "mom and pop" operation if capital improvements are to be controlled by political commissars.

The Federal Trade Commission insists that we must be permitted to advertise and thus become competitive. They hope to replace the liaison Committee on Medical Education, the AMA, and other voluntary accrediting organizations for the professions by government officials, so as to insure competition.

If all the expensive, labor saving modern equipment is to be concentrated by "Certificates of Need" and "Regionalization" exclusively in hospitals and public institutions, there will be no competition and I fear little innovation.

PRIVATE ENTERPRISE IN MEDICINE

The least expensive delivery of ambulatory primary care is still available in the offices of the solo private physicians, and on a cost basis neither the government nor the public institutions can compete with them.

Private enterprise recognized the need for "walk-in" emergency services on holidays, weekends, and in the off hours from 5-11 p.m. Private clinics, privately funded, decreased the heavy flow of ambulatory patients to the more expensive hospital emergency departments.

The possibility of incomplete and inaccurate diagnoses being made without the employment of every available diagnostic procedure, as required by the courts of this state, always exists. The threat of malpractice suits from ambulatory strangers in these circumstances is a distinct likelihood. It follows that some additional expense for prudent "defensive medical practice" must be anticipated and not condemned as abuse.

If the legislators and judges of this state wish to decrease expense, they must decrease the liability of physicians providing emergency or other primary contact care, rather than attempting to abolish, curtail or redistribute that care.

Public funds usually are employed years after private funds have initiated innovation. We would not have the Mayo, Lahey, Ochsner and other clinics if certificates of need had been required.

I do not believe that public institutions should be protected from the competition of the entrepreneur who opens his facility nearby and fulfills a need at lower cost. I do not believe that non-profit insurance organizations should be the health planners of the future, nor should they seek to restrict private enterprise. I do not believe the insurance industry should be forced to pay for personal services or for expensive procedures of unproved value.

I do not believe that government-appointed planning groups should have the authority to add to, or delete items from, the health insurance company's benefit package. Those benefits have been developed with professional advice and negotiation and their costs have been projected, and are reflected in the established premiums. Only basic necessities of care should be mandated, and those who wish additional benefits must seek them by other means.

PLANNING AND COSTS

The economists now estimate that last year 139 billion dollars, or 8.6 per cent of the gross national product, was spent on health care. They are concerned that this is too much and predict dire consequences if they rise to 10 per cent. However, in a free society it should be the people who decide whether they want more health care, and thus less alcohol, tobacco, recreation, or entertainment. In funding a centralized health care delivery system, legislators are concerned, not that too much will be spent on health, but that less will be available to be spent on the other segments of the economy. They would ration health care, not to the level of the patients' needs, nor to the level the people can afford, but to the level that political priorities dictate.

With the elimination of direct payment as a method of rationing, what methods are there to curtail over-utilization and establish priorities as to who will receive treatment and for what? A decrease in availability of equipment and facilities will create a shortage of care. The providers will then be forced to delay elective procedures, create waiting lists, defer treatment until the illness runs its natural course, or death may intervene and save expense. The providers will be subjected to delays in payment, denial of payment after the rendition of services, and non-payment for differential diagnostic procedures when the final diagnosis did not require their use. A "second opinion" obtained from a selected panel of physicians prior to surgery may be used to determine whether surgery can be deferred, rather than whether the surgery is advisable. This technique is already being implemented in some states.

RIGHT TO KNOW VS. PRIVACY

With government supported programs comes the consequences of the "Sunshine Law," the public's "right to know"—to whom how much, as well as for what, the public funds are expended. The individual's right to privacy as to the nature of his illness, as well as the privacy of the provider's income vanishes. The media delight in publishing the names of individuals who receive large sums of public money without any accompanying facts as to expenses, number of individuals involved, or accuracy of their revelations. So far the sunshine has caused more burn to government officials than facial erythema to providers.

There will be increased government interest in quality as well as quantity of health and medical care. The erosion of individual responsibilities will be extended as there is increased public interest in the health of the private individual. Government has long been concerned with communicable disease and mental illness because of the general belief that the health of those individuals affected was a danger to the public good. Compulsory treatment in the future may exist because of concern not so much that those ill are a danger to society, but rather that untreated, they are an added expense to society. If the public has to bear the expense of long periods of hospitalization, will there be coercive meth-

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ods of disease prevention? Will there be a prohibition of smoking, drinking alcohol, or overeating, or further attempts at compulsory use of safety gear such as helmets and seat belts? Will we have block committees to serve as weight watchers? Will the pharmacist, now requested to contact those patients who have not returned at the proper time to refill prescriptions, be required to do so?

One person's costs are another person's livelihood. The expansion of all industries and subsequent greater employment are desirable. The health care industry has traditionally been a source of employment for the handicapped, the unskilled, and the skilled. The unemployed would be better utilized in aiding the sick and infirm rather than queuing up for a dole or building roads that shortages of fuel may soon make obsolete.

REGULATION AND QUALITY OF CARE

Will public funds be spent for regulators, certifiers, auditors, tax collectors, investigators, and prosecutors, or will those funds be spent on personnel to administer better patient care?

If increasing the number of physicians and physician extenders, at the same time decreasing the availability of expensive facilities, is counter-productive, are there any other avenues to cost containment? What changes can be initiated in the delivery system to make it less expensive without curtailing high standards of care? We must modernize the business side of practice, eliminate time-consuming paper work, avoid repetition of x-ray studies and non-essential but expensive laboratory tests. As new diagnostic and therapeutic procedures become available, they must where possible replace the old and not be an additional expense. Each year millions of dollars are spent in the needless continuation of tests and procedures that modern knowledge and techniques have rendered obsolete. Our students must be taught to think of probability as well as possibility, and that a diagnosis once established need not be expensively and repeatedly confirmed. If 85 per cent of the health care expense is paid for non-physician services, equipment, drugs, and supplies, we must use our influence sharply to curtail waste, over-utilization, and repetition in all those parameters.

ROLE OF THE INDIVIDUAL PHYSICIAN

As commodores of a fleet rather than captains of a single ship, the public will hold us responsible and we shall bear the blame for the actions of the entire armada. Some of the cost is engendered by so-called "voluntary illness" and can be diminished or eliminated by a change in a person's lifestyle. Such illnesses include those associated with self-pollution and abuse, accidents, violence, suicides and homicide. We can eliminate some diseases, including venereal disease, by the preventive measures of immunization, prophylaxis and health education. Some diseases such as hypertension, if properly and continuously treated, can decrease the percentages of early heart attacks, strokes, and kidney failure.

The role of the physician must thus revert to the concept that he is more than a purveyor of surgery and pills, but that he is an educator. The public must from childhood to old age have health education. We must impart to them the knowledge they need for preventive measures, self-care, avoidance of self-pollution, and self-abuse. They must be taught self responsibility in prevention of illness, in self-treatment, in seeking professional help, and in the avoidance of over-utilization of expensive health care services. They must learn the distinction between expensive health care services, medical services, and personal services.

If the physician does not regulate quality of care and those costs that are under his control, he must not complain when someone else regulates them and, in turn, regulates him.

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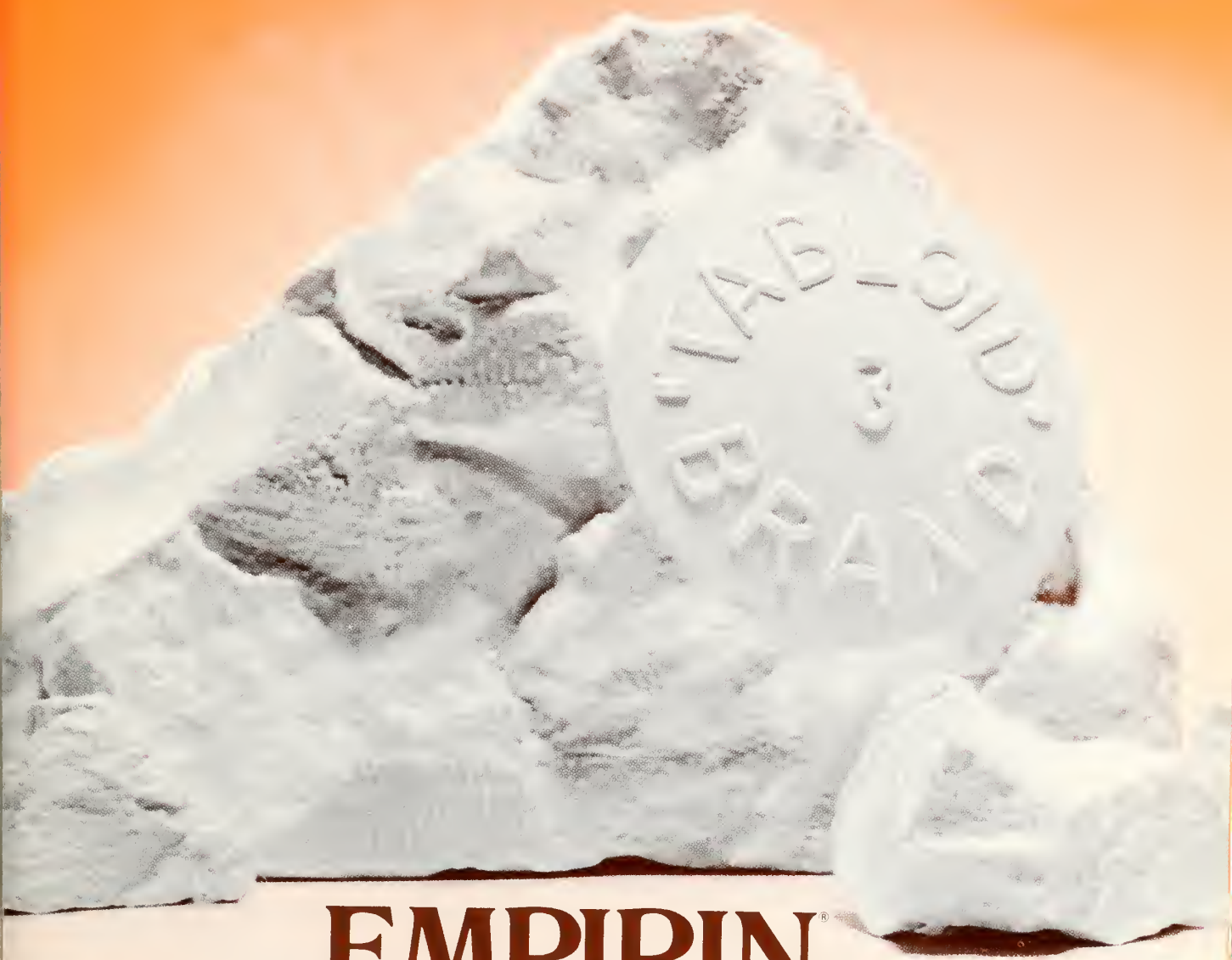
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NEW NAME

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*Czapek EE: *JAMA 235*:636, 1976.

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Contraindications: Hypersensitivity to aspirin, phenacetin, caffeine or codeine.

Warnings: See Warnings below.

Precautions: *Allergic:* Precautions should be taken in administering salicylates to patients with active peptic ulcers and those with known allergies; patients with nasal polyps are especially likely to be hypersensitive to the medication. SEE ADDITIONAL PRECAUTIONS BELOW.

Adverse Reactions: Most frequent adverse reactions are listed below. Some patients taking salicylates develop nausea and vomiting. Hypersensitivity may be manifested by skin rash or anaphylactic reaction. With these exceptions, most side effects occur after repeated administration of large doses; include headache, vertigo, ringing in ears, mental confusion, drowsiness, sweating, thirst, nausea, and vomiting. Occasional patients experience gastric irritation and bleeding with aspirin.

Phenacetin side effects usually result from overdosage. Cyanosis, acute hemolytic anemia, skin lesions, and fever may appear with toxic doses. Continued abuse may lead to renal damage.

Caffeine side effects almost always result from overdosage; include insomnia, restlessness, excitement, tense muscles, and diuresis. Tachycardia and extra systoles may be observed.

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Contraindications: Hypersensitivity to acetaminophen or codeine.

WARNINGS, PRECAUTIONS, ADVERSE REACTIONS AND DRUG INTERACTIONS COMMON TO BOTH PRODUCTS

Warnings: ***Drug dependence.*** Codeine can produce drug dependence of the morphine type and may be abused. Dependence and tolerance may develop upon repeated administration; prescribe and administer with same caution appropriate to oral narcotics. Subject to the Federal Controlled Substances Act.

Usage in ambulatory patients. Caution patients that these products may impair mental and/or physical abilities required for performance of potentially hazardous tasks such as driving a car or operating machinery.

Interaction with other CNS depressants. Patients receiving other narcotic analgesics, general anesthetics, phenothiazines, tranquilizers, sedative-hypnotics, or other CNS depressants (including alcohol) may exhibit additive CNS depression; when used together reduce dose of one or both.

Usage in Pregnancy. Safe use is not established. Should not be used in pregnant patients unless potential benefits outweigh possible hazards.

Precautions: ***Head injury and increased intracranial pressure.*** Respiratory depressant effects of narcotics and their capacity to elevate cerebrospinal fluid pressure may be markedly exaggerated in the presence of head injury, other intracranial lesions or a pre-existing increase in intracranial pressure. Narcotics produce adverse reactions which may obscure the clinical course of patients with head injuries.

Acute abdominal condition. These products or other narcotics may obscure the diagnosis or clinical course of acute abdominal conditions.

Special risk patients. Administer with caution to certain patients such as elderly or debilitated patients and those with severe impairment of hepatic or renal function, hypothyroidism, Addison's disease, or prostatic hypertrophy or urethral stricture.

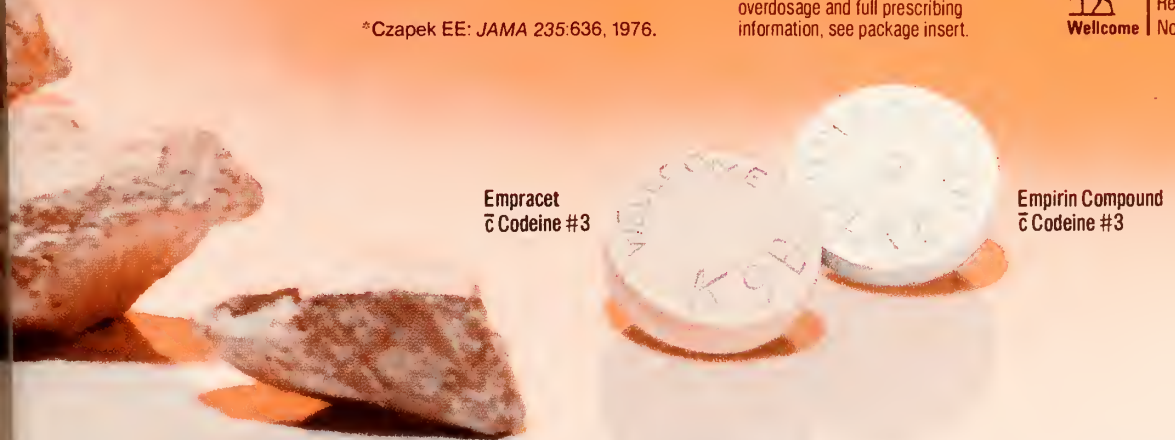
Adverse Reactions: Most frequently include lightheadedness, dizziness, sedation, nausea, and vomiting; more prominent in ambulatory than in nonambulatory patients; some may be alleviated if patient lies down; others include: euphoria, dysphoria, constipation and pruritis.

Drug Interactions: CNS depressant effect may be additive with that of other CNS depressants. See Warnings.

For symptoms and treatment of overdosage and full prescribing information, see package insert.

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MILITANTS VEXED AT PRIVACY.

Wanted Movies of Ceremony, But Both Factions Are

WASHINGTON, Aug. 26, 1920—



Social Security Bill Is Signed, Gives Pensions to Aged, Job

Roosevelt Approves Message Intended to Benefit 30,0 Persons When States Adopt Cooperating Laws–He the Measure 'Cornerstone' of His Economic Progr

WASHINGTON, Aug. 1
The Social Security Bill, p
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SENATE APPROVES 18-YEAR OLD VOTE IN ALL ELECTIONS

Amendment to Constitution is Sent to House, Where Passage is Expected

WASHINGTON, March 10, 1971—The Senate approved today, 94 to 0, and sent to

TRUMAN CLOSES ITED NATIONS CONFEREN WITH PLEA TO TRANSLATE CHARTER INTO DEEDS

NEW WORLD HOPE

President Hails 'Great Instrument of Peace,' Insists It Be Used

HISTORIC LANDMARK

Meeting Gives Standing Ovation as Executive Pictures Peace Gain

"If we fail to use it," he declared to the solemn final meeting of the delegates, 'we shall betray all of those who have died in order that we might meet here in freedom and safety to create it.'

"If we seek to use it selfishly—for the advantage of any one nation or any small group of nations—we shall be equally guilty of that betrayal."

Fervent Interpolation

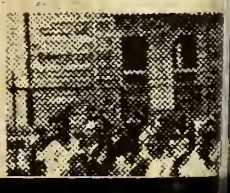
The President, speaking in the auditorium of the War Memorial Opera House, built in memory of sons of the Golden Gate city who gave their lives in the first World War, in which he himself served, seemed to give unconscious expression to the solemn feeling of the occasion when, at the outset of his speech, he interpolated the words, half a hope, half a prayer:

"Oh, what a great day this can be in history!"

Just before the plenary session

IGNI the Dra Ends No

WASHINGTON, Jan. 27, 1973—"With the signing of the peace agreement in Paris today, and after receiving a report from the



PATIENT PACKAGE INSERTS: A CONCEPT WHOSE TIME HAS COME?

The consumer's right to know is an irreversible and desirable trend of the Seventies. It extends, and properly, to a patient's right to know more about his or her prescription medications. One way, gaining favor, is through patient package inserts. Wisely-prepared and properly distributed when medically indicated, they could markedly improve patient knowledge and drug therapy—laudable goals by anyone's standards.

The PMA endorses these goals and will work with government, the health professions and consumers to achieve them.

The Advantages

The concept holds promise of benefits: better patient understanding of the product prescribed, better adherence to the treatment plan, and more awareness of possible side reactions.

Every doctor has had patients who fail to finish antibiotic regimens because they feel better. Some patients assume that if one tranquilizer or analgesic is good, two may be twice as good. Still others fail to report dizziness while on antihypertensive therapy —and so on.

Problems like these might arise less often if the patient received written information in addition to verbal instructions. Some studies suggest that patients are more receptive to such materials, and they more often understand the verbal instructions and follow them, when inserts are used.

The Disadvantages

There are also some potential problems. Obviously, the inserts must be clearly phrased, without extraneous or complex detail. How much information is enough? How can it be kept current? Should all patients receive the same information? Should inserts be included with all drugs? Should only potential problems be listed or are patients better off with a "fair balance" presentation that describes usefulness as well as drawbacks?

These and similar questions require answers, since model inserts have yet to be properly developed and tested. Despite the need for these studies, the FDA is proceeding prematurely with inserts on selected products. We think the Congress is the only place where the matter can be given the proper legal status and direction, particularly since it represents a conceptual change in the legal, medical and social framework of the nation's prescription drug information system.

The Solution

The PMA believes that carefully-devised pilot studies of various kinds of inserts are needed. They should be developed and implemented with full participation by doctors, pharmacists, consumers, communications experts and the drug industry. Such studies will provide reliable pathways to follow, so that inserts will be useful aids to medical practice.

And particularly we think that you should be closely involved in this debate and in these studies and decisions. Otherwise, people with less experience and qualifications may control the purposes, content and use of a tool with considerable promise for improved patient care. It could make a difference in your practice tomorrow, and more importantly, in the health of your patients.

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Editorials

RECOMBINANT DNA: FEAR OF THE UNKNOWN

The recent furor, political and scientific, over the possibility that genetic engineering might produce biological horrors and tragic outcomes through tampering with dimly understood evolutionary forces has barely subsided. Research at the Harvard laboratories in Cambridge, which was held up by the Cambridge city legislature, has been given the go-ahead, and the NIH have given their approval for the resumption of experiments in this field, although it has not sanctioned all experiments in genetic engineering. The guidelines strictly prohibit cloning of recombinant DNAs derived from higher-risk pathogens, or from moderate-risk oncogenic viruses, or from cells known to be infected with such agents. The deliberate formation of recombinant DNAs containing genes for the biosynthesis of potent toxins, such as diphtheria, or recombinant DNAs from plant pathogens that would be likely to increase in virulence and host range, is also prohibited. Further excluded are the release of any organism containing recombinant DNA into the environment, the transfer of a drug resistant trait to an organism not known to acquire it naturally, and large-scale experiments with recombinant DNAs known to produce harmful products.

Published elsewhere in this issue of the **Journal** is an important paper by Doctor Bernard D. Davis of the Harvard Medical School, which takes a dim view of the broad restrictions placed upon scientific investigations of this type. This authoritative and well reasoned study appears to lay to rest on sound epidemiological grounds any substantial fears of disaster.

Doctor David Baltimore of MIT, a member of the original committee that recommended the temporary halt in recombinant DNA research, now believes that the restrictions placed upon the work with tumor viruses make "it barely possible to go forward." Holland[1] believes that it is virtually impossible to contain research of this sort and that, if not done in the United States, it will be done elsewhere. Holland concludes: "This work does not seem to involve any Faustian bargain, but rather is a result of man's yearning for knowledge, of his desire to explore ever deeper into the mysteries of life, both within himself and in his environment."

REFERENCE

[1]Holland John J: Recombinant DNA: Hypothetical fears vs potential benefits. **Ca-A Cancer Journal for Clinicians** 27:167-9 (May/June) 1977

THE LAETRILE FOUR

So much has been written about laetrile that it would seem superfluous once again to address the subject in a publication read mostly by physicians. An article in a recent issue of **The New York Times** (June 26, 1977), however, is so informative that it is worthwhile to review its salient points. Its title "Credentials of Laetrile Figures Found Exaggerated" is somewhat understated. Background sketches of the four leaders of the movement to promote laetrile — Bradford, Krebs, Richardson, and McNaughton — are very revealing.

Robert W. Bradford of Los Altos, California is president of the largest organization

(Continued on next page)

seeking to legalize laetrile, the Committee for Freedom of Choice in Cancer Therapy, Inc., which claims a membership of 35,000. Bradford, 46 years old, has at various times described himself as a scientist, an engineer who attended Georgia Tech, and an electronics specialist who helped develop guidance systems for missiles. Despite his claim to have attended Georgia Tech for two years, a search of the registration and alumni records of that institution failed to turn up his name. Records in the United States Attorney's Office in San Diego, where he was convicted some months ago of conspiracy to smuggle laetrile into the country, for which offense he was fined $40,000, indicates that he attended San Jose Community College for one semester in 1950 studying police administration.

After leaving college Bradford enlisted in the Air Force, where he described himself as having "helped develop the guidance system for the first United States tactical guided missile" at Cape Kennedy and as having directed "the Air Force electronics and guidance systems program." The fact is that the highest rank he ever attained was staff sergeant. After leaving the Air Force he was employed by several defense contractors and in the 1960s by Stanford University, which was developing its linear accelerator technology. Although he described himself as an engineer, the Stanford employment records listed him as an "expert technician." The California Food and Drug Bureau estimates that Bradford, now a laetrile distributor, takes in $150,000 to $200,000 a month in laetrile sales.

Ernest T. Krebs, Jr., aged 66 and considered by many to be the chief theoretician of the laetrile movement, is the son of Dr. Ernst T. Krebs, Sr., a physician who patented laetrile in the 1940s. Krebs, Sr. was convicted in 1962 and 1966 of selling illegal medicines including laetrile and was fined $4,000. He died in 1970. Krebs, Jr. recently served luncheon guests tuna fish sandwiches, coffee, and apricots in syrup dusted with a flour made of pulverized apricot pits. On his necktie is displayed the gold pin of the John Birch Society, of which three of the four principals are members.

Krebs lists himself in the telephone directory as "Dr." and claims that he received an honorary doctorate from American University in Washington. The degree actually was awarded, not by American University, but by a small Bible school in Oklahoma, which, in fact, is not authorized to award degrees above the bachelor's level. He refers to himself as a "biochemist" and "nutritionist" and has stated that he completed three years at Hahnemann Medical College. He did complete the freshman year on a second try, but failed his sophomore year and was dropped. He has upon occasion used the initials Ph.D. after his name, but he has no such degree. He attended at various times Memphis State Teachers College, the University of Mississippi, San Mateo Junior College, the University of California, and the University of Illinois, which awarded him a bachelor of arts degree in 1942. He was described as a lackluster student who received low or failing grades in some of his scientific courses, including chemistry. Krebs has maintained that neither he nor any member of the Krebs family "has ever made a cent from laetrile." Federal agents in 1972 indicated that Krebs and his brother Byron, an M.D., had an income of $250,000 in 1970 and 1971, primarily from the sale of laetrile and other non-approved drugs. In 1974 the two Krebs brothers pleaded guilty to violations of the state health and safety laws, were fined $500 each, given suspended sentences of six months, and placed on probation. Later, in May of 1977, Krebs was ordered to serve the suspended sentence for violating his probation. Byron Krebs' medical license was revoked after the original trial. He has since died.

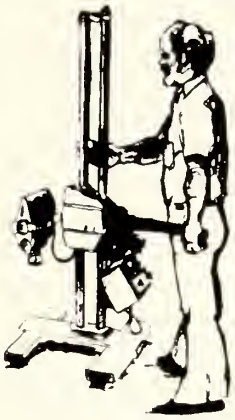
Doctor John A. Richardson, aged 54, has just published a book titled "Laetrile Case Histories: The Richardson Cancer Clinic Experience." The book, 390 pages long, contains many case histories of patients purported to have been helped by laetrile. In September 1976 Richardson's license to practice medicine was revoked by the California Board of Quality Assurance. Among the charges were the following: that he had "aided and abetted the unlicensed practice of medicine by permitting unauthorized persons" — a nurse, his son, and his business manager — "to treat and care for" seven patients; that he had permit-

(Continued on page 402)

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ted an unlicensed person (Krebs) to examine a patient; and that he "personally and his agents advised and discouraged" four patients "from seeking conventional cancer therapy." Four of these patients either paid or were asked to pay $2,000 for a course of laetrile treatments. In 1972 Richardson reported on his federal income tax return a net income of $10,400 on a gross of $88,000. By 1974 he was able to report a net income of $173,000 and a gross of $783,000. Between January 1973 and March 1976 he was reported to have taken in $2.8 million. In San Diego Federal Court he was fined $20,000 for conspiracy to smuggle laetrile into the United States. A graduate of Hamilton College and the University of Rochester (M.D.), he engaged in general practice in the San Francisco bay area, practicing surgery, obstetrics, and ENT. In 1964 and 1968 his insurance company paid malpractice claims totalling $77,000 for cases involving two infants, one whom died, while the other was disfigured for life. In 1976 he was one of 16 persons indicted along with three Mexican corporations on charges of conspiring to smuggle laetrile into the United States.

The fourth and last of this cabal is Andrew R.L. McNaughton, a 60 year old Canadian citizen, now living in Mexico. The Immigration and Naturalization Service has barred him from reentering this country. A member of a distinguished Canadian family, his father was the late Gen. A.G.L. McNaughton, Commander in Chief of the Canadian Armed Forces in World War II and later a delegate to the United Nations. The junior McNaughton was a test pilot during the hostilities, but after the war he engaged in gun running to Israel and Cuba.

McNaughton first met Krebs, Sr. in 1956 in a Miami Beach drugstore, where he heard Krebs dilate upon the benefits of laetrile. He was so impressed that later in San Francisco he joined Krebs in establishing the McNaughton Foundation to pursue projects "on the outer limits of scientific knowledge." The foundation received a donation of some $130,000 from one Joseph Zicarelli of Bayonne, New Jersey, whom federal authorities have identified as the boss of organized crime in Hudson County. McNaughton, as described below, has been involved in stock swindles in the United States, Canada, and Italy. In 1972, in an action brought in federal court by the SEC, he was permanently enjoined from selling stock in a Montreal company, Biozymes International Ltd., which he founded in 1961. He was charged in this action with "employing schemes to defraud the public" regarding laetrile and with "making untrue statements concerning the substance." He is also alleged to have swindled $17 million from purchasers of Biozymes stock in Italy.

In 1974 McNaughton was found guilty in a Quebec court of stock fraud involving a company named Pan American Mines from which funds totalling $5 million disappeared. He was fined $10,000 and sentenced to serve one day in jail. He failed to do either, and there is now a warrant out for his arrest. Failing to obtain legal sanction for use of laetrile in California he set up a production facility in Tijuana, Mexico. The McNaughton Foundation has sponsored two organizations in that town. One, the Clinica Cydel, administers laetrile to Americans and others seeking treatment, while the other, Cyto Pharma de Mexico, is the laetrile manufacturing arm. Cyto Pharma was indicted in San Diego in 1974, along with three brothers named Del Rio, who are believed to have a financial interest in the company. They have thus far failed to appear in court.

Thus endeth the saga of the Laetrile Gang.

A late development in the laetrile story as of this writing is a study by the National Cancer Institute of failure of laetrile to kill transplants of human breast and colon cancer in rats, while other anti-cancer agents were effective. A more recent report indicates that laetrile may actually be toxic to human subjects. It is to be hoped that trials in human cases will soon be undertaken to settle once and for all this sordid business.

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INADEQUACIES IN THE RHODE ISLAND WORKMEN'S COMPENSATION ACT

Excellent rapport exists among the physicians of Rhode Island, the Workmen's Compensation Commission, and the state's practicing attorneys. We, therefore, wish to express our appreciation to Commissioners Donald A. Kingsley, Herman Ferrara, and John A. Notte, Jr., and Chairman Eugene Laferriere, for the many courtesies extended to the members of the medical profession when they appeared as medical witnesses at the Workmen's Compensation Court. In particular, I should like to acknowledge the awareness shown by the Commissioners of physicians' busy schedules. Seldom are we made to wait for long before being called to the witness stand at the Compensation Court.

There are, however, matters that we as physicians believe are in need of adjustment or revision. The following are the most troublesome inequities.

A physician is required to submit a written report to an employer or insurance carrier within fifteen days of the first day on which a workmen's compensation case comes under his care. The physician is also required to submit a follow-up report not less often than every two months in each case. In addition, he is required to submit a written report within three months following the last visit of the patient to his office.

As an example, I would call attention to the case of Palumbo vs. United States Rubber (February 15, 1967). In the decision it was held that, if the physician or any attending physicians fail to submit reports as required, the employer is not responsible for the payment of the physicians bills for services rendered. This case points up the fact that the physician will be paid if he files his reports in compliance with the act; however, if he fails to comply with the provisions contained in the act, he cannot proceed against either the employer or the insurance carrier.

It is obvious that in the matter of submitting of reports by physicians the penalties are all directed against the physician. I know of no penalty directed against the insurance carrier. The carrier has to meet no time limit, does not have to make payments within any period of time, and is not obliged to give authorization for surgery within a stated period of time.

The proposals I am making would provide that, since a physician must make his initial report within fifteen days of the first visit of the injured workmen, make periodic reports every two months, and make a final report three months from the date of the last visit of the patient to his office, the carrier should in turn be required to meet certain obligations also. These should include the following.

1. **Payment.** The carriers should be required to make a payment to the physician soon after the receipt of the first report, after each two months' report, and soon after the receipt of the final report. This suggested requirement does not appear to be unreasonable. Failure to comply with this recommended requirement should carry a penalty.

2. **Authorization for surgical procedures.** Physicians must obtain from the employer or carrier written or verbal authorization for all major surgical procedures. It is not uncommon for a carrier to delay for lengthy periods before either giving or refusing authorization, even after a written request is submitted. When the carrier refuses to authorize the surgery, the physician in some cases can get authorization from the Commissioner with certain conditions specified. In some of the cases in which authorization for surgery has been requested, the cases have been accepted as compensable by the carrier, while the physician nevertheless has been made to wait for long and indefinite periods of time after his request has been made in writing.

To correct this problem, I would suggest that the carrier be given a time limit in which authorization is either given or refused.

(Continued on page 406)



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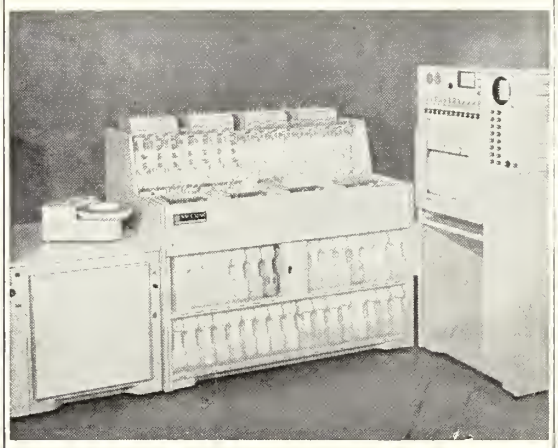
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3. **Acknowledgement of written reports.** A physician may have been submitting written reports in a case periodically for several months when he abruptly receives a notification by the carrier that the case has been investigated and found not to be compensable. The carrier should be required to acknowledge the first report of the physician within a specified period of time indicating whether or not the carrier has accepted the responsibility. While it may be difficult in some instances to ascertain within a certain period of time whether or not cases are compensable, a carrier could ask for an extension of time in cases which warrant it. Failure on the part of the carrier to comply with this suggested requirement should also carry a penalty.

4. **Entering of medical reports in evidence.** Physicians are busy persons. In order not to disrupt a physician's busy schedule any more than necessary, it would help if carriers, attorneys, and courts, when feasible, would enter into evidence written medical reports. This would serve to save the carrier the fee for the doctor's testimony and would help to ease the physician's work load.

5. **Fees for services.** In workmen's compensation matters, when workmen find it necessary to obtain the services of an attorney, the attorney is awarded a fee by the Commissioner, which is paid by the insurance carrier. When a physician has difficulty in collecting fees for services rendered to injured workmen and finds it necessary to engage the services of an attorney, the physicians must pay the attorney out of his own pocket. It is felt that in these cases the fee for the physician's attorney should be paid by the carrier if the Commission or any judge finds in favor of the physician.

In conclusion, I would suggest that the Rhode Island Workmen's Compensation Law be revised. I much prefer the New York State Compensation Law System, which categorizes each physician according to his specialty, with the result that he may treat only the cases which come within his particular specialty. The New York State System also contains appropriate provisions for services by general practitioners. The New York System is rather specific as it applies to physicians'

charges. Allowable fees for the various services are scheduled. Consequently misunderstandings concerning the reasonableness of fees are infrequent. The fee allowed for a surgical procedure includes that for a reasonable amount of postoperative care. For example, the amount paid for a heniorrhaphy covers a period of daily immediate postoperative care. The same applies to a laminectomy, open reduction of a fracture, or others.

It would be desirable to review the New York State Compensation Laws when and if revision of the Rhode Island Compensation Act is under consideration. It is many years since there has been a general revision and updating of the Rhode Island Workmen's Compensation Act. The time has come to undertake this important task.

A. A. Savastano, M.D.

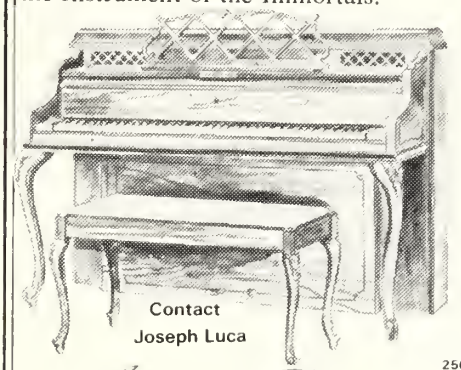
Woman's Auxiliary Scholarship Award



The Providence Medical Auxiliary has recently presented ERNEST A. SUTCLIFFE, JR. a scholarship of $500. Ernest, a Rhode Island resident, graduated from Cranston High School. In 1975, he graduated from Providence College, where he was received into the Biology Honor Society and the Philosophy Honor Society. He is entering his third year of medical school at Brown University and is a member of the American Medical Student Association.

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CONTROLLED SUBSTANCES Rx FORGERIES

(Continued from page 389)

TABLE VII
FORGERY PASSAGE BY LOCATION IN PROVIDENCE STANDARD METROPOLITAN STATISTICAL AREA

Geographic Location*	% R.I. Pop.	# of forgeries	Rx/ 1000 Pop.
Area I — The Cities	47	278	.62
Area II — Providence County	14.4	43	.34
Area III — Bristol County	10	49**	.51
Area IV — Kent County	14.8	22	.16
Area V — Washington County	3.8	5	.14
Area VI — Newport County	10	3	.03
Area VII — Unavailable Data	—	89	—

*as defined in **1974 Journal Bulletin Rhode Island Almanac**, p. 181
**contains 41 forgeries by a single individual
Source: Data Collection

Use of photocopies was a frequent trick of the forger. If the original forgery passed the pharmacist's scrutiny, previously made photocopies would appear at local pharmacies in the area. Even though the quality of these duplications often was poor, they were sometimes honored as legitimate prescriptions.

DISCUSSION

For detected, non-prosecuted forged prescriptions for controlled substances filed in Rhode Island during the period June 1, 1967 to December 31, 1973 anorexics, analgesics, and cough and cold preparations constituted the three major therapeutic classes both in terms of numbers of orders and numbers of dosage units.

This study suggests that forgery attempts have been reduced somewhat since the effective date of the CSA.

Physicians can be of great assistance in combating prescription forgeries by assuring prescription blank security in their offices, clinics, and hospitals. Aided by modern reproduction methods, skilled forgers need obtain only one "sample" blank to carry on their illicit activities.

While it is more convenient to have one's DEA number printed on the blank, it is recommended that physicians consider the alternative of writing their respective DEA numbers on the blanks at the time the prescription order is executed. Pharmacists are trained to detect discrepencies in the alpha-

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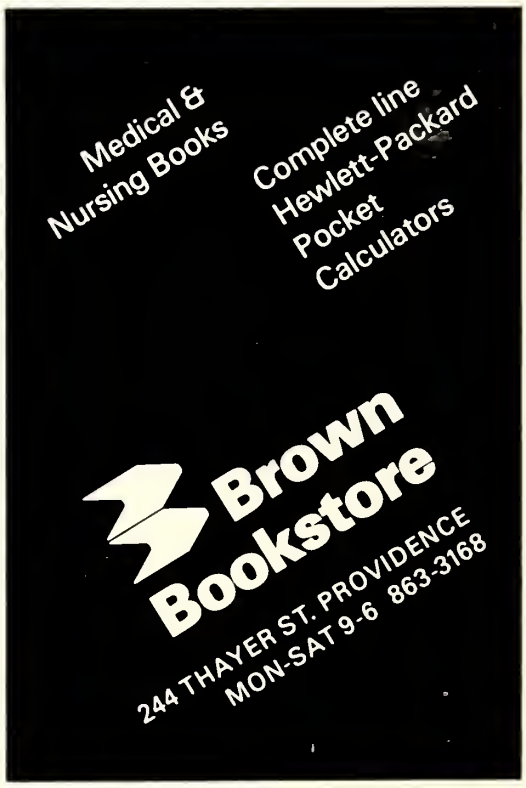
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numeric sequences and combinations which may trip up an unaware forger or passer.

Full cooperation in responding to pharmacist telephone inquiries will help also in detection and apprehension of forgers.

It is hoped that future studies will indicate an amelioration of the problem and better control of this diversion mechanism in Rhode Island.

College of Pharmacy
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Kingston, RI 02881



HOME PROGRAM . . . FOR INFANTS WITH REPAIRED CLEFT PALATE

(Continued from page 385)

group of children with repaired clefts of the palate and lip was initiated over a seven-year period in place of direct voice and speech therapy. Results indicated that communication in twenty-three of the twenty-seven children reviewed was satisfactory to both parents and a group of professional listeners. While a control group was not possible in this type of study, a seemingly high ratio of success was noted without the involvement of time in direct speech therapy, usually associated with this group of children.

ACKNOWLEDGEMENT

We wish to thank Richard Sexton, M.D., Director of Cleft Palate Clinic, Rhode Island Hospital, for his guidance and assistance.

His concern for those with palatal disorders is a continuing inspiration for those fortunate enough to be associated with him.

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(Continued on page 410)

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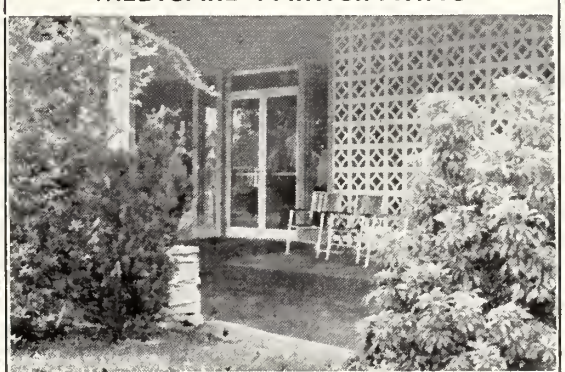
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APPROACH TO RECOMBINANT DNA PROBLEM

(Continued from page 381)

I would like to review briefly a few points that I made at that time.[3]

First, as far ahead as it is profitable to look the medical aim of genetic engineering in man is simply gene therapy, for diseases due to defects in single genes. (Cloning is another matter: its social purpose would not be medical; and since its specific aim is to **avoid** genetic recombination it is not advanced by recombinant research.) For most hereditary diseases gene therapy would require that we be able to introduce DNA in a reliable, controlled way, in the right cells: and I believe we are still a long way from that goal. But even if this guess is wrong, and if we succeed in gentically curing such diseases as phenylketonuria and cystic fibrosis, it is clear that we would still be very far from being able to manipulate in any useful way the large number of genes, all still undefined, that specifically direct the development and the function of the brain. Moreover, in a developed organism, with an already formed brain, no conceivable manipulation of DNA could reorganize the wiring diagram of that brain — which is surely the main basis for the genetic differences that contribute to human behavioral diversity. Hence, the possibility that a tyrant could use genetic engineering to manipulate personalities seems still too remote to justify present concern. Finally, even if we could use genetic technology in this way, I would question whether the technological imperative would necessarily (or even likely) lead us to do so. For the simple techniques of selective breeding and artificial insemination are already available, and their effectiveness has been demonstrated in animal husbandry: but they are not being used to influence the human gene pool.

Philosophical questions about the effects of science and technology on man's fate go back to Galileo — and the history of Italy's fate in losing that early head start should give us pause. For better or worse, we cannot unlearn the scientific method; and if we restrict it in one country it will turn up in another. To be sure, our world has only recently come to realize how large (and often unexpected) is the price for various aspects of technology, how finite our terrestrial resources, and how clumsy our responses to the need to limit our demands on those resources and the size of our population. Faced with these crushing problems, it is only too easy to take the benefits of science and technology for granted and to object to the new problems that they are raising. But in the long run it is difficult to see how we can plot a more prudent course than to continue to advance knowledge, to promote its beneficial applications, and to increase our vigilance in assessing the hazards and the costs of specific possible applications **as soon as they become visible.** Since our capacity for reliable long-range technology assessments is virtually nil, vigilance concerning new knowledge that **might someday** be misused is a threat to freedom of inquiry, and I believe a threat to human welfare. We may conceivably be entering dangerous territory in exploring recombinant DNA — but we are surely entering dangerous territory if we start to limit this exploration on the basis of our incapacity to foresee its consequences.

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NOTICE TO RIMS MEMBERS

The audited financial statements of the Joint Underwriting Asscciation were mailed to the membership in late July. If you desire another copy you may call the executive office at 331-3207.

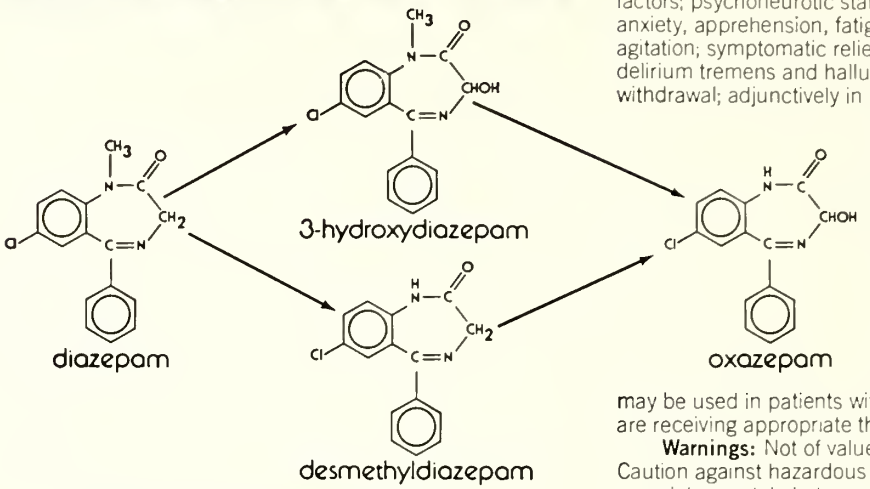
Rhode Island Medical Journal

September, 1977 Vol. 60, No. 9

Book Review: Costs, Risks, and Benefits of Surgery

See Page 447

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Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

Usage in Pregnancy: **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

ROCHE

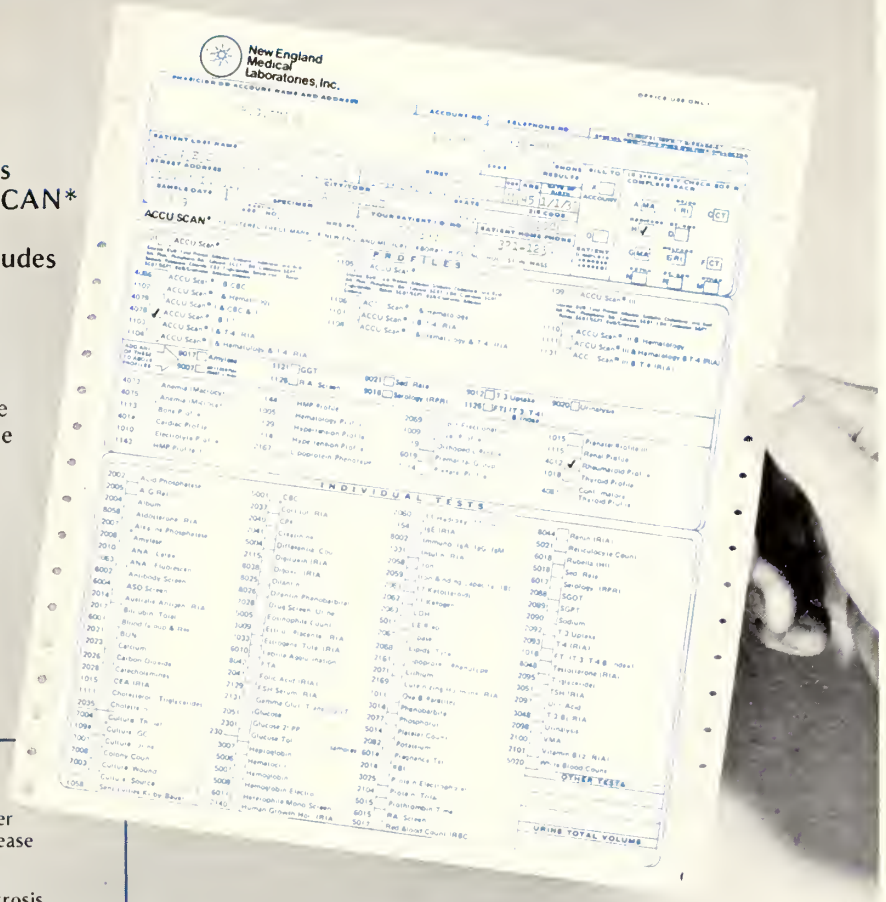
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Rhode Island Medical Journal

SEPTEMBER, 1977 VOLUME 60, No. 9

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CONTINUING MEDICAL EDUCATION CALENDAR

OCTOBER

5 SYMPOSIUM ON CHILDHOOD NUTRITION. Topics will include: "Infant Nutrition — Common Misconceptions," Lloyd J. Filer, Jr., M.D., Mead Johnson Professor in Pediatric Nutrition, University of Iowa College of Medicine; "Colic, Iron Deficiency and Similar Problems in Infancy," Lewis Barness, M.D., Professor and Chairman, Department of Pediatrics, University of South Florida; "Zinc and Copper in Infant Nutrition: Current Aspects," Lucille S. Hurley, M.D., Professor of Nutrition, University of California School of Medicine; "Nutrition and Diabetes: How Critical is Dietary Control in Children?" by Allan L. Drash, M.D., Professor of Pediatrics, University of Pittsburgh School of Medicine; "Obesity in Children: Current Observations and Implications for Therapy," Jerome Knittle, M.D., Professor of Pediatrics, Mount Sinai School of Medicine, New York. George Auditorium, Rhode Island Hospital, Providence, 8 A.M. to 4:30 P.M.

5 "CURRENT THERAPY OF RHEUMATOID DISEASES," John A. Mills, M.D., Director, Arthritic Clinic, Massachusetts General Hospital, and Associate Professor of Medicine, Harvard Medical School. A-V Conference Room, James Building, Newport Hospital, Newport, 10 A.M. to 12 Noon. Guests are invited to luncheon at noon.

6 "CONTINUING EDUCATION FOR THE CLINICIAN," Richard A. Carleton, M.D., Chief, Cardiology Division, Memorial Hospital, Pawtucket, RI, and Professor, Division of Biological and Medical Sciences, Brown University. Memorial Hospital, Pawtucket, 7:30 P.M.

12 DIABETES MELLITUS CONCEPTS AND PRACTICAL MANAGEMENT 1977: LECTURES AND WORKSHOPS. Information on program and registration obtainable from Diabetes Association of Rhode Island, 739-4335. Cranston Hilton Inn, Cranston, 8:30 A.M. to 5 P.M.

14 "PHYSIOLOGIC APPROACH TO CONGESTIVE HEART FAILURE IN INFANCY," Norman S. Talner, M.D., Professor of Pediatrics, Yale University School of Medicine. Roger Williams General Hospital, Providence, 10:30 A.M. to 12 Noon.

18 "THE ROLE OF CYTOLOGY IN THE EVALUATION OF DES-RELATED ABNORMALITIES OF THE GENITAL TRACT," Donald A. Antonioli, M.D., Assistant Professor of Pathology, Harvard Medical School. Further information obtainable from Ms. Jeanne Wiken, 272-5692. George Auditorium, Rhode Island Hospital, 7:30 P.M.

21 THE 15TH ANNUAL CHARLES A. STUART MEMORIAL LECTURE, "Genes, Viruses and Human Cancer," Sol Spiegelman, M.D., Director, Institute of Cancer Research, College of Physicians and Surgeons of Columbia University. Room 166, Barus and Holley, 184 Hope Street, 4:30 P.M. Refreshments at 4 P.M.

NOVEMBER

2 "CHANGING PATTERNS OF SERIOUS BACTERIAL DISEASE," Max Finland, MD, George Richards Minot Professor of Medicine Emeritus, Harvard University, and Distinguished Physician, U. S. Veterans Administration. Sponsored by Newport Hospital. Details obtainable from Mrs. Elizabeth Cranston, 401-846-6400. Place to be designated, 10 A.M. to 12 Noon.

9 SYMPOSIUM — HYPERTENSION: MECHANISMS AND CLINICAL APPROACH. Sponsored by the Division of Renal Diseases, Department of Medicine, Rhode Island Hospital; Brown University Program in Medicine; and CIBA Pharmaceutical Co. A Medical Horizons presentation. Information on program and registration obtainable from Mrs. Irene Owens, 863-3330. Marriott Motor Inn, Providence, 8:50 A.M. to 5 P.M.

16 ADVANCES IN PEDIATRICS SYMPOSIUM, 14th Annual Maurice N. Kay Pediatric Symposium. Topics will include "Radiologic Evaluation of the Chest," John Kirkpatrick, M.D., Professor of Radiology, Harvard Medical School, and Radiologist-in-Chief, Children's Hospital Medical Center, Boston; "Idiopathic Thrombocytopenic Purpura — New Concepts of Pathogenesis and Treatment," Irving Schulman, Professor, Stanford University School of Medicine; "A Clinical Approach to Chronic Diarrhea in Infancy," Claude Roy, M.D., Professor of Pediatrics, University of Montreal. Marriott Inn, Providence, 9 A.M. to 5 P.M.

22 "COMMUNICABLE DISEASE CONTROL AND THE PROSPECTS OF SEVERAL NEW VACCINES," Nicholas J. Fiumara, M.D., M.P.H., Director, Division of Communicable and Venereal Disease, Massachusetts Department of Public Health, and Clinical Professor of Dermatology, Boston University School of Medicine. A-V Conference Room, James Building, Newport Hospital, Newport, 7:30 to 9:30 P.M.

30 SEMINAR: CHILDREN AT RISK FOR ABUSE: A NATIONAL CRISIS. Sponsored by United Palsy of Rhode Island and Women and Infants Hospital. Program includes luncheon. Further information obtainable from Ms. Diana Andrade. Women and Infants Hospital Auditorium, Providence, 8:30 A.M. to 4:30 P.M.

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A Message From The Dean

WOMEN IN THE STUDY AND PRACTICE OF MEDICINE

The number (and rate) of women entering the study of medicine in the United States has risen steadily in the past three decades. During the second half of the nineteenth century, in contrast, fewer than one per cent of graduates of American medical schools were women. Indeed, the first MD degree granted by an American school to a woman was not conferred until 1849.

During the academic year ending in June of 1977 there were 57,765 registered students in the US medical schools, of whom 12,914 (22.4 per cent) were women. Since 1970, moveover, the number of women admitted to the American medical schools has risen from 9.6 per cent to an estimated 25.5 per cent for the present first year medical school classes which began in September 1977.

TABLE 1.
WOMEN ATTENDING THE MEDICAL SCHOOLS OF NEW ENGLAND (1975)

	No. Women	Total No. Students	% Women
Boston	124	505	24.6%
Brown	61	239	25.5
Connecticut	45	226	19.9
Dartmouth	36	161	22.4
Harvard	172	668	25.8
Massachusetts	40	154	26.0
Tufts	150	605	24.8
Vermont	52	321	16.2
Yale	96	419	22.9
	776	3298	23.5

Table 1 summarizes the numbers of women attending the medical schools of New England as of June 1975 (the last year that comprehensive data from each school was available). The rates of women matriculating in each of these schools, incidentally, has risen substantially since this date. Note that the 1975 percentages tend to cluster with only modest variation. Brown (25.5 per cent) is close to the New England average. New England (23.5 per cent), in turn, is somewhat higher than the medical schools of the South (14.4 per cent), Midwest (16.5 per cent) or West (19.0 per cent). In 1975 women constituted 19.6 per cent of the student body in the 48 private medical schools of the United States and 16.9 per cent in the 66 publicly owned medical schools of this country.

TABLE 2.
WOMEN APPLYING AND ATTENDING THE MEDICAL SCHOOLS OF THE UNITED STATES (1972-1977)

Entering Class	% of medical school applicants who are women		% of first year medical students who are women	
	National	Brown	National	Brown
1972	15.2%	NA *	16.8%	25.0
1973	17.8%	NA	19.7%	30.0
1974	20.4%	19.7	22.2%	21.7
1975	22.6%	22.2	23.8%	31.7
1976	24.3%	29.0	24.7%	41.0
1977	25.0%	29.3	25.5%	31.7

*NA = not available.

Table 2 lists trends during the past six years in the extent to which women are **applying** to medical schools and the extent to which they are being **admitted.** This table specifically compares the data derived from Brown with results on a national level. These data indicate a steady growth in the number of women expressing a serious desire to study medicine; currently one out of every four applicants to US medical schools are submitted by women. The proportion of women applying to Brown Medical School has roughly paralleled the national rise, although the percentage of women applying to Brown in the past two years was somewhat higher than that encountered nationally.

During this period of observation women applicants have been more successful in achieving admission than their male colleagues. Thus, for example, in 1972 women

(Continued on next page)

constituted 15.2 per cent of the applicant pool but 16.8 per cent of those accepted. This slight selective advantage has prevailed in the ensuing six years, although the differences in admission rates have now become essentially inappreciable. The percentage of women in the first year medical school classes at Brown follows the same pattern (i.e., a slightly higher rate of acceptance than application and a progressive rise in the rate and number of women in attendance). Of the 244 medical students presently in attendance at Brown, 75 are women.

These trends carry certain inescapable implications: **First,** the essentially male character of medicine in Rhode Island (less than 7 per cent of presently registered physicians are women) is not likely to prevail in the years ahead as women currently attending medical schools or in residency training programs enter the private practice of medicine. **Second,** it is also unlikely that these women will be confined to the professional disciplines which they have traditionally pursued in the past (pediatrics, public health medicine, teaching, and research). In increasing numbers women are populating the residency training programs of internal medicine, ophthalmology, pathology, radiology, rehabilitation medicine, psychiatry and even some of the surgical subspecialties. **Third,** the higher rate of professional attrition experienced in the past by women physicians (occasioned largely by maternal and domestic responsibilities) no longer seems to occur, and this factor can no longer be regarded therefore as a deterrent to women willing and able to assume increasingly responsible and diverse roles in our profession.

STANLEY M. ARONSON, M.D.
Dean of Medicine
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MALPRACTICE INSURERS SUBJECT TO ANTITRUST SUIT BY PHYSICIANS

A trial court should not have dismissed a suit by several physicians who alleged that four insurance companies violated antitrust laws in selling malpractice insurance, a federal appellate court in Rhode Island ruled.

The physicians charged that the insurance companies conspired to shrink the malpractice coverage available to Rhode Island physicians. One company changed its future malpractice policies to the "claims made" type rather than the "occurrence" basis. That forced physicians to purchase malpractice insurance for longer periods of time to protect against late claims.

When physicians tried to take their business elsewhere, the other three insurance companies refused to sell them insurance of any sort. The physicians then filed suit against the insurance companies for injunctive relief and treble damages under the Sherman Antitrust Act. A federal trial court dismissed the suit, and the physicians appealed.

In a precedent-setting decision, the federal appellate court reversed the decision. When they engage in acts of boycott, coercion or intimidation, insurance companies are subject to the Sherman Act and are not exempted by the McCarran-Ferguson Act, the court said. The McCarran-Ferguson Act generally exempts insurance companies from federal antitrust laws as long as they are regulated by state laws.

The appellate court disagreed with nine earlier court decisions that had said that insurance companies were subject to antitrust laws only when dealing with other insurance companies.

In expanding the applicability of the antitrust laws to an insurer's dealings with consumers or policyholders, the court analyzed earlier decisions and the legislative history of the McCarran-Ferguson Act.

The physicians should be permitted to maintain their action for treble damages and an injunction, the court concluded. — **Barry v. St. Paul Fire & Marine Insurance Company,** 555 F.2d 3 (C.A.1, R.I., May 16, 1977).

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Endocarditis Associated With Indwelling Venous Catheters

Strict Adherence To Aseptic Technique And Changing Site Of Insertion At Regular Intervals Are Recommended

By Roger E. Schmid, M.D.
Stephen H. Zinner, M.D., F.A.C.P.

In the past decade there has been an increased appreciation of the potential for indwelling venous catheters to cause local infection and sepsis[1-4]. Isolated reports have appeared relating bacteremia produced by intravenous catheters to the development of infectious endocarditis[2, 6-10]. In an attempt to elucidate the relationship of the use of indwelling catheters and the occurrence of endocarditis, the experience with this disease at the Rhode Island Hospital over the past decade has been reviewed.

MATERIALS AND METHODS

Hospital records were reviewed of all patients with bacterial endocarditis at the Rhode Island Hospital between July 1965 and June 1975. In each case the diagnosis was based on one or more of the following criteria: multiple positive blood cultures in the presence of ventricular septal or valvular defect, peripheral manifestations of endocarditis, or pathological evidence of the disease.

Note was made of patients in whom the use of indwelling venous catheters was closely related to the onset of endocarditis. For purposes of this study, "indwelling venous catheter" refers to a plastic catheter placed in a peripheral or central vein for continuous or intermittent infusion of fluids or medications, for maintenance of access to the blood stream, or for measurement of central venous pressure.

RESULTS

The records of 144 patients with 151 cases of endocarditis were reviewed. The mean age ± standard deviation (SD) was 54.4 ± 20.2 years, with males accounting for 58 per cent of the patients. Prior heart disease occurred in 76 per cent, with 50 per cent of patients having rheumatic mitral valvular disease. Murmur and fever were the most consistent

(Continued on next page)

ROGER E. SCHMID, M.D., *formerly a Resident in internal medicine, the Rhode Island Hospital, Providence; currently a Fellow in infectious disease, Mayo Clinic, Rochester, Minnesota.*
STEPHEN H. ZINNER, M.D., F.A.C.P., *Associate Professor of Medicine, Brown University; Head Division of Infectious Diseases, Department of Medicine, Roger Williams General Hospital, Providence.*

TABLE 1.

Indwelling venous catheters associated with endocarditis

Patient Number	Age and Sex	Reason for Initial Hospital Admission	Interval Catheter Insertion to Onset (Days)	Duration of I.V. Catheter Use (Days)	Blood Culture Results	Valvular Involvement	Outcome
1	47 F	Upper GI bleeding	11	5	Enterococcus 2:2	Mitral or Aortic	Recovered
2	65M	Weight loss. Being treated for Strep. viridans endocarditis	8	8	Canlida tropicalis 8:16	Mitral and Aortic	Death due to cerebral embolism
3	70M	Acute myocardial infarction	3	>1½	Strep. viridans 8:8	Aortic	Recovered
4	71 F	Exacerbation of chronic lung disease	4	>1½	B-Hemolytic strep. Not group A 3:3	Mitral	Death due to sepsis
5	46 F	Paroxysmal atrial tachycardia	3	2½	Staph. aureus 2:2	Mitral	Death due to sepsis
6	81M	Upper GI bleeding	3	4	Staph. aureus 2:4	Not Reported	Recovered

signs, being found in 94 per cent and 92 per cent of patients, respectively. Clinical or pathological evidence of glomerulonephritis or renal embolization was found in 42 per cent of patients. Splenomegaly occurred in 36 per cent as did congestive heart failure. The erythrocyte sedimentation rate was elevated in 96 per cent of cases. Anemia and leukocytosis each were found in 64 per cent. Blood cultures revealed the most common etiologic agents to be **Streptococcus viridans** (40 per cent of patients) and **Staphylococcus aureus** (10 per cent). In 15 per cent of patients all blood cultures were negative. The overall mortality was 20 per cent, with congestive heart failure being the most common cause of death.

Cases in which indwelling venous catheters were associated with the onset of endocarditis are detailed in the Table. Six patients, 4.0 per cent of the total, were included in this category. In these individuals no site of origin of bacteremia other than the intravenous catheter was found. Four patients had pre-existing valvular heart disease. The suspect intravenous catheters were inserted between 3 and 11 days (mean 5.3 days) prior to the onset of signs and symptoms of endocarditis and remained in place for 36 hours to 8 days (mean 3.8 days).* In 50 per cent of patients phlebitis (Patients 2 and 5) and cellulitis (Patient 6) occurred at the site of catheter insertion. Culture of the tip of the catheter was performed in only 2 patients (Patients 2 and 6); these cultures yielded the same organism as was isolated from blood culture. There were 3 deaths in this group (Patients 2, 4 and 5), with autopsies confirming the diagnosis of infective endocarditis in each case. The clinical and laboratory characteristics of these 6 cases were not significantly different from those of the overall study population.

DISCUSSION

In 1967 Smits and Freedman concluded that 9 per cent of cases of sepsis developing in hospitalized patients resulted from the use of

*In 2 patients (Patients 3 and 4) the duration of use of the implicated intravenous catheter beyond 1½ days was unclear from the records.

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Anorexia Nervosa

Lithium Administration Has Contributed To The Management Of Anorexia Nervosa

By Peter P. Reilly, M.D.

Anorexia nervosa, predominantly a disorder of adolescence, may occur at any age.[11] It should even be considered in the differential diagnosis of anorexia in patients over the age of 50.

Psychoanalytic dynamics[14] describe the anorexia nervosa patient as one who is in a relentless pursuit of thinness due to an established fear of fatness. For such a patient to refuse food is in itself a source of pleasure indulgent for its own sake.

Bruch[2,3] distinguishes three diagnostic criteria in anorexia nervosa: 1) Distortion of body image. 2) Distortion of diet[7,8] with an intense desire to be slim, using purging, vomiting, and the hiding of food. The refusal of food apparently does not reflect a loss of appetite to achieve this goal, but simply a desire to lose weight, a phobia of normal weight. 3) A sense of personal ineffectiveness with the formation of a dependent, but negativistic relationship. Alternative diagnosis include depressive or schizophrenic illnesses with delusions related to food.

Studies in 1954 reported the presence of obsessional traits, dependence and shyness, hypochondriacal traits, food faddism, anxiety proness, and hysterical traits. Only a quarter of the patients were stable. In 1960 studies, subjects were divided into three groups: 1) Histrionic and willful. 2) Rigid and perfectionist. 3) Apathetic, withdrawn, and schizoid. Other features reported were anxiety, hypochondriasis, excessive activity and ambition, and conversely apathy and lack of energy. DE Smart[14] in his 1976 studies showed higher than normal degrees of neuroticism, anxiety, and independence. His patients were more introverted than usual, and showed marked obsessional features. They were all of normal intelligence. Since most of the patients are in early adolescence,[10,15] it is disputable whether at this age they should be assumed to have established personalities.

PREVALENCE

AH Crisp et al[5,6] in studies in England in 1976 showed that there is one severe case in every 250 pupils aged 16 years and over. A conclusion drawn was that anorexia nervosa is much more common than indicated. It is in fact a common condition and is probably getting more common.

Studies in Sweden in 1971 concluded that anorexia nervosa is present in quite definite and severe form to the extent of one in every 150 adolescent girls. These girls had lost 30

(Continued on next page)

PETER P. REILLY, M.D., *Child-Adult Psychiatrist, formerly Clinical Instructor in Psychiatry at Harvard Medical School; currently on Active Staff at St. Joseph's-Fatima Hospital and Consulting Staff of the Miriam Hospital, Providence, RI.*

per cent of their body weight and manifested protracted amenorrhea. Their bizarre dietary attitudes and behavior related to a wish to lose weight and sustain low weight over many months or years. In these studies the middle class was highly represented. The etiological factors noted were: 1) Affluent and overnourished society. 2) The rapid growth through puberty which the latter promotes, especially among females, who thereby especially come to associate their mounting fatness with adolescent self-consciousness and turmoil. 3) The associated propensity for almost universal attempts at dieting among female adolescents. 4) The particular psychological problems of an existential kind, which are different from those which have confronted previous generations in recent times. The studies concluded that anorexia nervosa is a common and serious disease "of our times."

ETIOLOGICAL FACTORS

There is increasing evidence in laboratory and clinical studies that anorexia nervosa is a complex psychoendocrinological and neurobiochemical condition, which affects the total person.[1] Coppen et al[4] based on their studies maintain that there is a relationship between the titre of 5 hydroxytryptamine (5 HT), an important indolamine neurotransmitter, which can cause an imbalance in hypothalamic function, which in turn results in the clinical picture of anorexia nervosa.[2] Travaglini et al[16] show a disturbance in thyroid stimulating hormone (TSH) and prolactin (PRI), and a hypothalamic disorder. In subsequent studies Travaglini found that luteinizing hormone (LH) levels were impaired, and that follicle stimulating hormone (FSH) was elevated in some cases; 17 estradiol values were decreased in 11 patients. Russell et al (cited by Travaglini) believes that the principal endocrine abnormality in anorexia nervosa is reduced gonadotropin levels. Marshall et al (cited by Travaglini) found gonadotropin secretion in anorexia nervosa to resemble that of the pre-pubertal or early pubertal phase, and their data to suggest a functional hypothalamic hypothyroidism. Bradlow et al[1] found a lower level than normal androsterone-etrocholone (A/E) ratio in young females with anorexia nervosa. Bradlow also found a low triiodothyronone (T_3) in a variety of chronic diseases and in acute starvation. The low T_3 is referred to by Carter et al (cited by Travaglini) as the "low T_3 syndrome" and is associated with a lower A/E ratio in certain anorexia nervosa females.

CASE HISTORIES

Case 1. A 40-year-old female was seen by me in April 1976 after a complete medical evaluation had been negative. The patient was extremely thin and emaciated. She appeared sad, and had a lack of interest in people and situations, and a poor self-image with alternating periods of anorexia, bulemia, and amenorrhea for 20 years. Patient had multiple non-specific body signs and symptoms, low energy level, and compulsive ritualistic eating habits. Patient was seen in one-to-one psychotherapy and placed on Trofranil® 10 mg by mouth at bedtime increased gradually to 100 mg daily.

The patient benefited from psychotherapy, but no change in her behavior pattern actually occurred until lithium was added to the medication regime. On 1200 mg of lithium daily the patient became less depressed, with more energy available to her. Apparently the metabolic effect of lithium increased her appetite and subsequently her weight from 100 to 135 pounds as of this writing. The patient's lithium is now monitored monthly and kept between 0.5 mEq/L to 1.5 mEq/L with no current side-effects, although at first the patient developed transient lithium tremors, occasional nausea, and lithium insomnia. The latter is controlled by the Tofranil® taken at bedtime. The patient has lost her loathing of fatness and is now able to go about her business of living.

Case 2. A 23-year-old female was seen initially on psychiatric consultation at a local hospital. The patient was 5 feet, 11 inches tall and weighed 96 pounds. Endocrinological and neurological examinations were negative, and blood chemistries, x-ray studies of the skull, and brain scan were negative. The patient had history of amenorrhea, anorexia, lack of energy, and intermittent dehydration. Eating was feared because of intestinal discomfort. All feelings were denied, and there was little concern over the mirror image of herself. The patient used her illness as a means of manipulating people and situations. She had a hos-

tile-dependent ambivalent relationship with her mother and a very limited social life, which consisted of a very volatile, self-destructive relationship with a male, who treated the patient in a physically sadistic manner. I saw the patient weekly in one-to-one psychotherapy and also in group psychotherapy. Psychotherapy was interrupted by the patient having herself admitted to the hospital again because of her extremely poor physical condition. An effective medication regime included Elavil® 100 mg with Tofranil® 100 mg both by mouth at bedtime. The combination helped decrease the patient's depressive process, presumably by elevating both norepinephrine and serotonin levels. The patient began to gain weight to the extent of 10 pounds and was able to become more invested in psychotherapy, until she decided to leave the local area. She was accepted at a university connected school of nursing in another state, at which time I lost track of her.

DIFFERENTIAL DIAGNOSIS

Hypothalamic tumors[3], according to Bruch, can produce a clinical picture indistinguishable from anorexia nervosa. He reported a patient in whom a complete neurological examination including electroencephalogram, brain scan, skull x-ray films, visual field studies and computerized tomography were negative. The patient was started on a program that included individual and group psychotherapy, milieu therapy, and recreational and occupational therapy in a school program. The patient saw nothing wrong in his appearance despite the severity of his nutritional status. He feared growing up and assuming adult responsibilities. The patient left the hospital against medical advice, and subsequently his physical condition began to deteriorate. He became febrile, disoriented, and dehydrated. Examination of visual fields at that time revealed a bitemporal quadrantanopsia suggesting a superior chiasmatic involvement with laboratory confirmation of panhypopituitarism. Radionucleotide brain scan revealed a midline suprasellar uptake. A cerebral arteriogram was normal, but a pneumoencephalogram revealed a large tumor displacing the floor of the third ventricle. After surgery the patient continued to show depressed affect, but all signs of anorexia disappeared. At the time of the report Bruch had lost track of the patient.

Heron[9] in 1976 reported a case of pinealoma effecting the hypothalmus, which presented initially as an appetite disorder and was diagnosed as anorexia nervosa.

Other conditions which must be taken into consideration in the differential diagnosis of anorexia include gastric irritation, venous distension of the viscera, and not uncommonly myocardial infarction causing nausea and vomiting and autonomic reflexes with subsequent anorexia. Hyponatremia and anorexia may be associated; hyponatremia may cause anorexia by inhibiting thirst, which could explain the anorexia associated with such conditions as Addison's disease and under dosage of corticosteroids. Anorexia may also be associated with inappropriate secretion of antidiuretic hormones or with advanced hyponatremic heart disease. Electrolyte disturbances associated with advanced liver disease can in certain instances cause anorexia. Anorexia associated with endogenous depression may be related to changes in sodium and water homeostasis. Pain and fear may also cause anorexia, both of which may be associated with advanced malignant disease. Hypercalcemia may cause both anorexia and depression. Anorexia may be an early sign of cancer of the pancreas. Infective endocarditis may be a cause of anorexia and depression. Anxiety along with depression is probably the most common cause of anorexia. Anorexia not uncommonly is associated with alcoholism or narcotic dependency. Medications such as the amphetamines and disulfiram (Antabuse®) are common causes of anorexia.

MANAGEMENT AND TREATMENT

Wulliemier et al[17] compared two different methods of treatment of anorexia nervosa, both performed successively by the same team in a general hospital setting. The first treatment consisted of strict isolation, appetite stimulating drugs, a psychotherapeutic approach, and supportive therapy by the staff. The second treatment was a behavior therapy method based upon operant-conditioning and avoidance learning. Results showed a 3 to 1 ratio in favor of the behavior method. O'Flannagan[13] based on his studies believes that an

(Continued on next page)

TABLE I.
SOME CLINICAL FEATURES OF ANOREXIA NERVISO, N = 4

	Maximum	Moderate	Mild	Not Present
Compulsive Food Rituals	4	0	0	0
Low Self Image	4	0	0	0
Anorexia	4	0	0	0
Low Self Esteem	4	0	0	0
Fear of Becoming Fat	4	0	0	0
Amenorrhea	2	0	0	0
Depression	2	1	1	0
Sadness	2	1	1	0
Anxiety	0	2	2	0
Somatic Complaints	2	2	0	0
Vomiting	1	0	0	3
Constipation	0	2	1	1
Bulimia	2	1	1	0
Low Energy Level	4	0	0	0
Hyperactive	1	3	0	0
Insomnia	1	2	1	0
Thinness	4	0	0	0
Schizophrenia	0	0	0	4
Apathy	2	2	0	0
Mental Fatigue	1	3	0	0
Poor Social Adjustment	2	2	0	0
Fear of Eating Because of Weight Gain	4	0	0	0
Attitude Towards Psychotherapy is Negative	1	1	2	0
Preoccupied with Cooking or Reading Cookbooks	3	0	0	1
Dryness of Hair	1	0	0	3
Overeating Alternate with Anorexia	3	1	0	0
Fearful of Sex	2	1	0	1
Sex is Abhorrent or Avoided	2	1	0	1
Eating Fear Because of Intestinal Discomfort	1	1	2	0
Concern Over Mirror Image	3	0	1	0
Feelings Denied	2	2	0	0

increase in weight as a side-effect of the tricyclic antidepressants is well documented. Improvement in weight and mood with a combination of glucagon, diazoxide, and adenosine triphosphate (ATP) was noted. Glucagon, like the catecholamines, stimulates the formation of 3-5 cyclic adenosine monophosphate (cyclic AMP). The combination of tricyclic antidepressants, glucagon, and ATP was used successively in 40 patients with no ill effects. According to Bruch, experience shows that behavior therapy often leads to further deterioration of family interaction, social relations, and eating behavior. He maintains that family therapy as the only treatment modality rarely obtains dramatic results after anorexia is firmly established. Bruch concludes that the goals of individual psychotherapy should include pertinent psychodynamic understandings together with active participation by evoking awareness of impulses, feelings, and needs.

Lucas et al[12] at the Mayo Clinic reports on 32 adolescents who were diagnosed as having anorexia nervosa. They were admitted to the hospital and stayed as in-patients until not only the eating power returned, but also relationships with peers and parents were improved and expressions of anger, issues of self-assertiveness, and independence were dealt with. Spontaneity in behavior and return of a sense of humor were seen as signs of recovery. Out-patient follow-up was considered essential. The Mayo group believe that behavior modification is useful because of its simplicity and the rapidity with which it produced weight gain. The Mayo group conclude that the distorted attitude toward food and eating, with overriding desire to maintain thinness, is the one clinical feature necessary for a diagnosis of anorexia nervosa. The later the symptoms begin, the greater is the likelihood that another illness such as depression or schizophrenia exists. The Mayo group recommended a combined medical psychiatric approach with a carefully coordinated team effort dealing with both inanition and psychological issues. Lucas et al stressed a four point approach: 1) Separation of patient from the home to interrupt the power struggle between child and parents. 2) Treatment of the malnutrition. 3) Psychotherapy of the individual dealing with such issues as anger, control, ambivalence towards parents, and dependence versus independence. 4) Work with the family ranging from supportive psychotherapy of the family to interactions between patient and other family members. The Mayo group believes in the team effort of psychiatrist and internist or pediatrician with the psychiatrist as psychotherapist and captain of the team. The psychiatrist makes known through the patient his values and views on weight and physical appearance and acknowledges that they may not coincide with the patient's beliefs. The psychiatrist makes it clear that he will not mandate a regime, but on the other hand that he will not allow the patient to starve or become obese.

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Early Treatment Of Burns By Open Silver Nitrate Spray

A Method Is Needed Which Is Effective In Disaster Situations And When Personnel Are Limited

By W. E. Lockhart, Jr., M.D., F.A.A.F.P.

Burn centers perform miracles once they have the patient, but care is woefully inadequate while enroute to the burn center. The deficit is that the burn wound is open and losing fluid, electrolyte, and protein for many hours while the patient deteriorates. Most papers on burns originate in burn centers, but this study was made on the Mexican Border remote from a burn center and under circumstances in which we were "the end of the line" in most instances. Early care of the burned patient is bad enough in this country where there is transportation, hospitals, and burn centers, but consider the circumstances in most of the world where these do not exist. The upper limit of an ambulance run with a burned patient is about 100 miles, and most burns occur more than 100 miles from a burn center, even in this country. We must consider the problem world-wide and perfect methods that are simple, effective, and economical and that could be applied even in the absence of a surgeon. We must develop methods applicable to disaster situations where burned patients are many and personnel are few.

The primary problem in the early treatment of a burn is to stop the flow of fluids, electrolytes, and protein from the wound, and this must be coordinated with management of shock, subsequent infection, and wound healing. Methods in general use today do not address these problems adequately.

At Big Bend Memorial Hospital near the Mexican Border we received burned patients after long journeys, and we devised a method combining features used in Galveston after the Texas City Disaster[1] with use of silver nitrate solutions applied as a spray.[2] We debrided the burn and applied one per cent silver nitrate using a Windex® spray bottle with freshly prepared solution. We avoided bandages because they are immobilizing, painful, and expensive, and require much professional attention. We passed over Sulfamylon® cream because it is painful and interferes with healing. We passed over Silvadene® because it does not promptly stop the flow of fluids, electrolytes, and protein from the wound. We passed over pigskin because its application requires technical skill, it is expensive, and it is not readily available in remote areas of the world. We found that one per cent silver nitrate applied as a spray was more effective than one-half per cent, with no disadvantage. It is available, inexpensive,

(Continued on next page)

DOCTOR LOCKHART *practices in Alpine Texas*

and painless, and has no hazards. Better than any other chemical silver nitrate promptly seals the wound and stops the loss of fluids, electrolytes, and protein and prevents deterioration of the patient while he is enroute to a burn center. The silver nitrate coagulates remaining damaged protein in the wound — thus to provide a chemical debridement that goes beyond the limits of surgical debridement — preventing absorption with deleterious effects. It destroys bacteria in the wound and provides a protective cover. It does not retard epithelial regeneration later on, and there is no evidence that the silver ion is absorbed — there is no argyria or tattoo — probably because of an excess of chloride and protein in the surface of the wound. We found that the method is simple enough to be applied by relatively unskilled personnel, that the method could be applied in remote areas with economic restrictions, and that the method would be effective in disaster situations. The method is applicable to all burns regardless of depth, but it is most effective in second degree burns, which are most common. The silver eschar will not peel off in full thickness burns but must be excised about the fourteenth day when the wound is ready for grafting. Silver nitrate spray is effective in treating donor areas in grafting.

METHOD

Ambulance personnel foam burns with menthol shaving foam as a first-aid measure. Our Emergency Room and our private rooms for burned patients have electric ceiling radiant heaters that keep the shocked and uncovered patient warm. The spray of silver nitrate solutions is not painful, but it is very chilling, and chilling induces metabolic acceleration. Respiratory problems are attended to. A cutdown is performed to insert a venous catheter. Blood samples for hemoglobin-hematocrit and electrolytes are drawn. Five per cent dextrose in lactated Ringer's solution is given at a rate depending on shock. The "standard formula" is kept in mind (4 ml x body weight x per cent burned surface per day), but if the burn is promptly sealed with silver nitrate, less solution may be required. If shock is present, 1.0 g of methyl prednisolone is added to a liter of venoclysis to be repeated every hour if needed. Analgesia is provided by small, repeated, intravenous injections of meperidine. All blisters, loose skin, debris, and "home remedy" is quickly removed using sterile water and iodophor scrub. An excellent curette is one-half of a straight surgical scissors. We formerly used pHisoHex,® but it has been shown[3,4,5] that hexachlorophene is absorbed into the blood and passes the blood-brain barrier to produce demyelination of the central nervous system. The most dangerous bacterium in an early burn is the staphylococcus. The detergent-antiseptic is rinsed thoroughly from the wound using sterile distilled water (not saline). The burn is sprayed thoroughly at close range with one per cent silver nitrate, being careful that no area is left unsprayed. Some plastic containers react with silver nitrate solutions; therefore, the container should be glass. The patient is carefully turned so that dependent parts are not neglected. It may be necessary for the patient to lie on a burned area.

The patient is moved to a private room with overhead electric radiant heaters and is kept uncovered at all times. Care is taken not to get the silver stain on the hospital surfaces and uniforms. We launder and reuse stained linen only for burn cases. The burn is re-sprayed thoroughly every hour for eight hours. Usually by the second hour all weeping has ceased, and a tan eschar gradually turns black on exposure to light. The solution does no harm if it gets in an eye. Hairy areas, such as scalp or chest, are first shaved before spraying.

The patient is immunized to tetanus. A staphylococcus resistant penicillin, such as oxacillin, is given 500 mg orally four times daily if the patient is not allergic to penicillin. Meperidine is given for pain and phenobarbital for sedation. We give water, milk, and — as soon as tolerated — a full diet, to which is added six eggs any style for quality protein. Vitamins and minerals supplement the diet. Curling's ulcers are due to infarction of intestinal mucosa due to shock and perhaps autoimmune phenomena[6] and not to diet. It is essential that a positive nitrogen balance be maintained.

A burn is a severe emotional crisis which we meet with calm assurance by word and

deed. A stable, devoted person is selected who will remain with the patient day and night. This person becomes expert in repeating the silver nitrate spray, and this would be valuable in a disaster. Face masks and "sterile" technique are not necessary.

Infection is the black bear of burns! If the burn is not infected, if it is second degree, and if nutrition has been maintained, the silver eschar will peel off by the fourteenth day exposing pink, regenerated epithelium underneath. If the burn is full thickness loss, it will not peel off, but it will be necessary to excise the eschar and graft. It is important that burn centers receiving patients who have been treated with silver nitrate are aware of this. If the burn becomes infected beneath the eschar, the eschar may break up in a characteristic way. This calls for intensive spraying plus antibiotics to see if infection can be overcome. The best antibiotic after the first week is chloramphenicol, and in this instance benefits justify the one in ten thousand risk of aplastic anemia. It may be necessary to re-debride the infected area and begin again with one per cent silver nitrate spray. This could be repeated several times. Infection may cause a peculiar loss of morale which should always be looked for. There may be loss of appetite. Fever, leucocytosis, and pain may be present. An infected burn should be cultured and sensitivities determined.

Depending on the skin-grafting skill of the primary surgeon, the patient may remain, or evacuation to a burn center may be carried out after stabilization.

DISCUSSION

Why is silver nitrate solution applied as a spray so effective in stopping the loss of fluids, electrolytes, and protein? This is observed as a fact, and this makes the method superior to any other during early hours — perhaps enroute to a burn center. The burn wound is a semi-permeable membrane nonperfused on the outside, but perfused with circulating blood on the inside. Osmotic tensions[7] on either side are proportional to concentration and molecular weights of chemicals in solution. When silver nitrate is applied to the outside of the membrane, silver proteinate and silver chloride are precipitated out of solution, the osmotic tension inside the membrane becomes relatively greater, and weeping ceases. This is the well known "styptic" effect of silver nitrate. Silver nitrate solutions are the most powerful of all bactericides. There is no evidence that the silver ion penetrates inside the membrane. There is no argyria or tattoo. Perhaps this is due to an excess of protein and chloride outside the wound. If hypochloremia is present, it is due to loss of chlorides from the wound — not to a "'leeching" effect of silver nitrate.

Methemoglobinemia was reported when 0.5 per cent silver nitrate was used as a continuous soak with bandages. We have not observed this complication with the open spray method, because, we believe, the wound is dry most of the time. During these periods any sodium nitrate present would be crystallized and not absorbed rapidly enough to oxidize hemoglobin from the ferrous to the ferric state. This would be a serious complication because oxygen transport would be impaired. The condition is rapidly reversed by intravenous methylene blue.

The burned hand is managed without bandages or splints except immediately after grafting. We maintain a rigorous program of active movements of hands and fingers with emphasis on morale. Where cracks occur in the silver eschar due to motion, spraying is done four times daily. The hand is recoverable after full thickness loss of dorsal skin, provided the extensor mechanism is preserved.

To date, beginning in 1966, we have used open spray silver nitrate in more than fifty cases. Our first case is presented here because, although we made several errors, it illustrates that very early sealing of the wound prevents loss of fluids, electrolytes, and protein reducing the necessity for intravenous fluids and electrolytes and otherwise prevents deterioration in the early hours. Although scalded to second degree over more than 50 per cent of body surface, we gave no intravenous fluids. This was a mistake. He was sprayed within 30 minutes after the burn. This proves that early sealing of the wound offers a major opportunity for improved management. Case two, our worst case,

(Continued on next page)

survived after many complications and procedures.

CASE REPORTS

Case 1. L.R.G., Latin-American male age 3 years, Big Bend Memorial Hospital No. 10379, was admitted 12:30 P.M. on January 28, 1966 a few minutes after he had tumbled into a tub of boiling water. He was wearing heavy cotton shorts, protecting genitalia and perineum. His head, neck, hands, forearms, feet, and forelegs were not burned. The remainder of his body was blistered to second degree — more than 50 per cent. He was kept warm by electric heaters. The wound was quickly debrided, removing all loose skin, scrubbbed with pHisoHex®, water and rinsed thoroughly and sprayed with 0.5 per cent silver nitrate solution using a Windex® spray bottle. He was allergic to penicillin. His parents remained with him constantly. Next day, when I visited him, he was standing up in his pediatric bed and gave me a hard look. Turning to his father he said: "I want another doctor!" There was no shock. He developed some infection. He was discharged on the fourth day — another mistake — with fever 38.4 C (101 F). The father continued silver nitrate spray at home. He made a complete recovery — no grafting.

Case 2. R.P., Mexican national male, age 24 years, Big Bend Memorial Hospital No. 17193, was admitted at 11:10 P.M. on January 19, 1970 three hours after he had been blasted out of a dug-out by ignited butane fumes. One hour before admission ambulance drivers had "foamed" the burn with menthol shaving foam at my direction. The burn was second degree over more than 70 per cent of his body surface, and of this 20 per cent was full thickness loss — including dorsum of fingers, hands, forearms, volar forearms, medial upper arms, and lateral chest walls. Heavy cotton shorts protected genitalia and perineum. His scalp was not burned, and the crease up his spine was not burned. He was wearing shoes. There was no respiratory burn. He was kept warm by electric heaters. Five per cent dextrose in lactated Ringer's solution was given rapidly by cut-down. Meperidine was given by muscle. The burn was cleaned and debrided using pHisoHex® and sterile water, rinsing with distilled water. He was sprayed with 0.5 per cent silver nitrate solution using a Windex® spray bottle. All of the second degree burn healed without infection, but some of the full thickness areas manifested infection on the fifth day. There was fever, lecucytosis, pain, loss of morale, and anorexia. I considered this to be "gram-negative shock." He was given 1.0 g chloramphenicol intravenously every six hours with improvement. Under light anesthesia we redebrided several full thickness areas and again sprayed with silver nitrate. He was given tetanus toxoid and penicillin. It was necessary to excise the silver eschar under anesthesia in full thickness areas, and more than 100 old-fashioned "pinch grafts" were applied to these areas with excellent results. He had a stormy course. His wife remained with him day and night in the hospital for fifty days. An intense program of finger and hand motion was maintained. He had a full diet plus six eggs daily with vitamins and iron. He was transferred to a Chihuahua, Mexico hospital, where he became depressed because his wife was not permitted to remain with him. His fingers became "clawed." He returned to my office — being ineligible for the hospital — and under light anesthesia I straightened the fingers and reassured him. He returned to full manual labor.

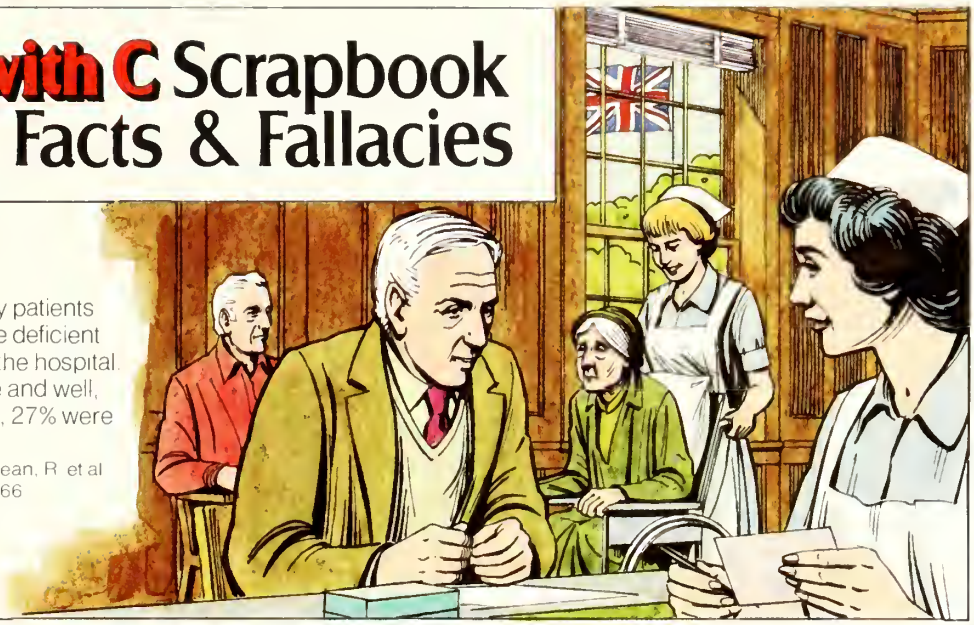
CONCLUSION

A method of treating severe burns as early as possible with intravenous meperdine analgesia, debriding the wound with iodophor scrub detergent-antiseptic, rinsing with sterile, distilled water, and spraying with a fresh solution of one per cent silver nitrate repeated every hour was developed on the Mexican Border remote from burn centers.

The method has the advantage of sealing the wound and stopping the loss of fluids, electrolytes, and protein, thus to prevent shock in the early hours (perhaps during transportation to a burn center), to ease pain, to precipitate damaged protein in the wound and prevent absorption, to destroy bacteria in the wound, and to seal the wound and provide a protective cover beneath which skin can regenerate in second degree burns and third degree areas are prepared for grafting.

(Continued on page 458)

The ALLBEE® with C Scrapbook of Vitamin Facts & Fallacies



A study conducted among elderly patients in England showed that 41% were deficient in ascorbic acid on admission to the hospital. Even among those living at home and well, or not sufficiently ill for admission, 27% were deficient in ascorbic acid.

Griffiths, L. L., Brocklehurst, J. C., MacLean, R. et al *Diet in Old Age*. Brit. Med. J., 1 739, 1966

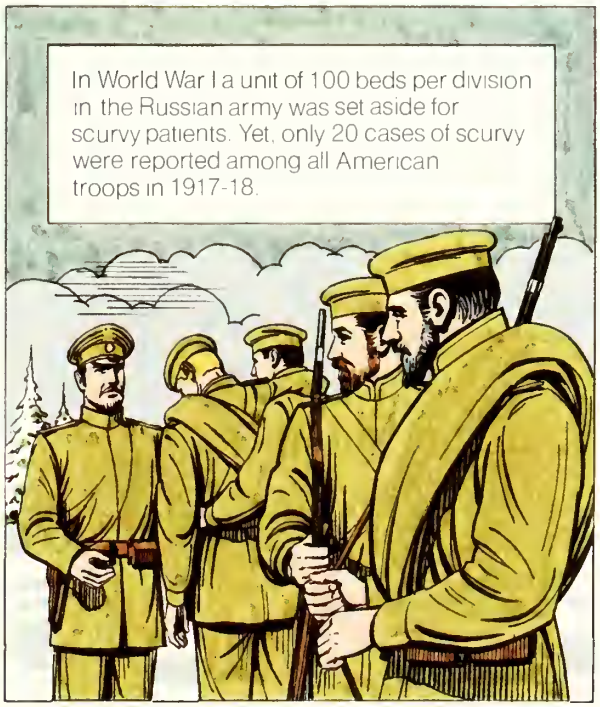


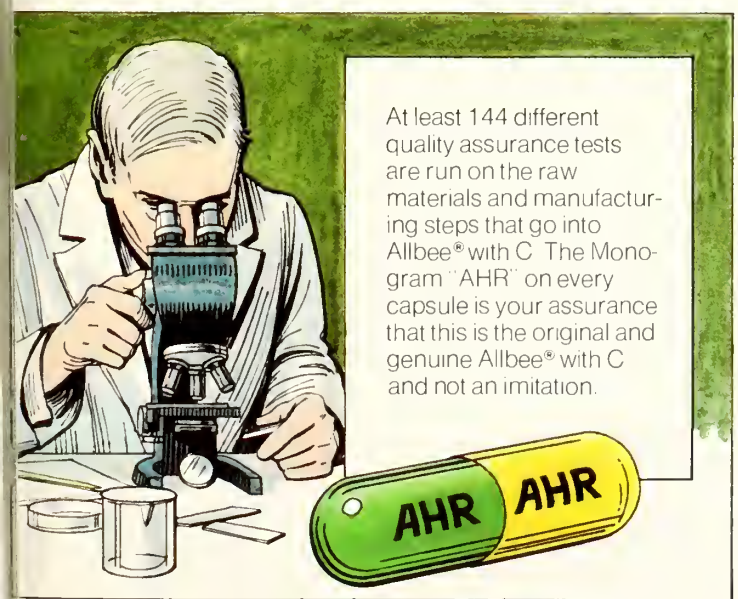
The loss of riboflavin in milk in a glass container exposed to sunlight for two hours may be as high as 95%.



Quick freezing of vegetables is accompanied by very little ascorbic acid loss. But blanching, washing, and prolonged standing at room temperatures results in considerable reduction in Vitamin C content.

In World War I a unit of 100 beds per division in the Russian army was set aside for scurvy patients. Yet, only 20 cases of scurvy were reported among all American troops in 1917-18.



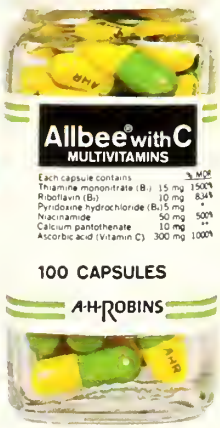


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Phenobarbital (warning: may be habit forming)	(¼ gr) 16.2 mg	(½ gr) 32.4 mg
Hyoscyamine sulfate	0.1037 mg	0.1037 mg
Atropine sulfate	0.0194 mg	0.0194 mg
Hyoscine hydrobromide	0.0065 mg	0.0065 mg

Indications: Based on a review of this drug by the NAS/NRC and/or other information, FDA has classified the following indications as possibly effective: adjunctive therapy in the treatment of peptic ulcer; the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis. Final classification of the less-than-effective indications requires further investigation.

Brief summary. Contraindicated in patients with glaucoma, renal or hepatic disease, obstructive uropathy (for example, bladder neck obstruction due to prostatic hypertrophy) or a hypersensitivity to any of the ingredients. Blurred vision, dry mouth, difficult urination, and flushing or dryness of the skin may occur at higher dosage levels, rarely at the usual dosage.

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A Matter Of Grave Importance

A New Regulation Which Provides A Determination Of Death

By Michael E. Scala, M.D.

To know with certainty when a person is dead is a matter of keen interest to all citizens in general, and to the physician in particular, since it is he who at this moment in time bears the final responsibility for making that decision. The present state of affairs regarding this problem should, therefore, be of considerable concern to the practicing physician of Rhode Island.

A PUBLIC HEARING

On July 7, 1976 a Public Hearing concerning the determination of death was held by the Rhode Island Department of Health. A Public Hearing represents the process by which a citizen may express his or her views regarding an impending rule, regulation, or governmental decision. It is not usually a forum for debate regarding controversial issues or a question and answer session, but a meeting at which a prepared statement may be read and duly recorded by interested persons or groups. In essence, such statements will be considered later as an expression of interest and purpose by a segment of the population and will thus provide the law-makers with information concerning the opinions of the public. The decision-making bodies would then be responsive to such expressions of interest.

It would seem that the determination of death, as proposed at the Public Hearing on July 7, 1976, should have been of overwhelming importance for the citizens of Rhode Island. Yet, there were fewer than a dozen representatives of the public present, only two physicians, both representing the Medical Examiners Commission, and no physicians from the medical community at large.

When one contemplates determination of death in the last half of the 20th Century, there are many issues that are intimately related to it and press for attention: the right to die, the right to life, euthanasia, quality of life determinations, and other pertinent questions. Indeed, these issues are all worthy of attention and are crucial for our living a full and personally rewarding life. When faced with issues such as these, that at the same moment require answers based on ethical considerations, religious values, society's good and individual good, we find ourselves confronted with seemingly insoluble dilemmas. We require as much pertinent information as possible for problem solving. Each individual is legitimately entitled to his own opinion, but no person is entitled not to have

(Continued on next page)

MICHAEL E. SCALA, M.D., *Adjunct Professor Anthropology, Rhode Island College; Instructor Orthopaedic Surgery, Division of Biological and Medical Sceinces, Brown University.*



all the facts when entering into such public decision-making. Here then are some of the facts regarding the proposed "determination of death" regulation.

THE PRESENT DEFINITION OF DEATH

The Medical Examiners Commission Act, Chapter 4 of Title 34 of the General Laws titled "Division of State Medical Examiners," includes, as part of its charge, that the medical examiner address himself to the question of determining when death has occurred. The law states in part that the Office of the State Medical Examiners shall be responsible "for the development and enforcement of procedures for the pronouncement of death . . ." This subject has urgent priority as one of society's concerns, because it can pertain to matters of inheritance, the utilization of organs, when remarriage may be permissable, and in general to set the public's mind at ease regarding these matters. Our citizens would like the assurance that they will not be prematurely pronounced dead for the benefit of someone still living. Until the late '50s, there seemed to be no difficulty in deciding when one was dead. The cessation of the functioning of the heart and lungs for a reasonable period of time was evidence enough to declare one dead. However, with the newly developed electronic systems that could be applied to the human body, the heart and lungs could be kept working for periods long beyond the body's actual ability to carry on those functions independently now or in the future. A landmark decision in the late '60s was handed down in the so-called "Virginia Brain-Death Case." In this case the presiding judge declared a person was dead when his total brain ceased to function as evident by a silent electroencephalogram for a fixed time period, even if breathing and circulation were being maintained artificially by machines. This represented a simple substitution of brain function for the functioning of the heart and lungs. The decision seemed reasonable since, as yet, we have no way in which we may artificially keep

the brain working. Its total death signifies final and ultimate "clinical" death of the person. This is the state in which all cellular function has ceased.

COMPOSITION AND ACTIVITIES OF THE MEDICAL EXAMINER'S COMMISSION

The laws in Rhode Island did not reflect these later so-called brain concepts. To remedy that situation the Medical Examiner in Rhode Island proposed to the Medical Examiner's Commission, as part of the agenda during one of its meetings, that the topic of the determination of death be considered. The members of the Medical Examiner's Commission is spelled out by law in the Medical Examiners Commission Act and includes ten members: the director of health, the attorney general, the superintendent of police, the president of the Rhode Island Medical Society, the president of the Rhode Island Society of Pathologists, the president of the Rhode Island Bar Association, the vice-president of the Brown University Division of Biological and Medical Sciences, the president of the Rhode Island Funeral Association, and two citizens at large.

As events transpired I was asked late in 1975 to substitute for one of the members of the Medical Examiner's Commission when at the last moment he was unable to attend. It was at that meeting that the medical examiner proposed "determination of death" as a suitable topic with which the Medical Examiner's Commission should engage itself. Serious questions were raised, and it soon became apparent that the M.E.C., as it was constituted, could not without further data address itself to that end. Because I had a very strong interest in this topic, having taught a course in Death and Dying with Doctor Ralph Redding at Brown Medical School, and served as an Instructor of the American Academy of Orthopaedic Surgeons in medical ethics, Doctor William O. Sturner, Chief Medical Examiner, asked me to chair an ad hoc committee

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whose purpose it would be to obtain and make available this needed information to the members of the M.E.C. It would then be their duty as mandated by the Medical Examiners Commission Act to prepare a determination of death based on that information and the need for such a definition, as well as expressions of the public, if they saw fit. I was to have no vote in the final decision, since I was not a legislated member of the M.E.C.

Recognizing the problem and defining the ground rules, we entered into serious dialogue regarding all the implications and parameters of the assigned task. It soon became obvious that there were other community resources that should be tapped. Many other opinions, lay and otherwise, might contribute to the finalizing of a course of action. With this in mind, the medical examiner and I requested that among others the following citizens of Rhode Island appear at a subsequent meeting; Rev. Thomas Twitchell, Rev. David Ames; Msgr. Arthur Geoghegan; the dean of the medical school, Doctor Stanley M. Aronson, already a member of the M.E.C., but whose neuropathological expertise was needed; Professor John Ladd, a philosopher from Brown University; Doctor Walter C. Cotter, a neurosurgeon; Mr. Kevin McKenna, a representative from the Attorney General's Office; Doctor Joseph Karas, a physician specializing in internal medicine; Mr. Larry Coen, a consumer advocate; and Mr. Edward Smith, a representative of the Rhode Island Bar Association.

All invited persons did not attend. In order to provide as much pertinent information as possible, we decided upon a strategy whereby I would interrogate each invited guest and M.E.C. member with a series of probing questions that would allow them to respond from their particular field of expertise, law, medicine, administration, religion, and others. Each guest was allowed to answer with as much depth, personal feeling, and technical application as he wished. There was no time limit for answers nor any restrictions to the opinions expressed. It was felt that this manner of quizzing could give the M.E.C. the greatest cross-cultural involvement of each discipline represented. After several more sessions of serious discussion and debate, much give and take, and soul searching by the members of the M.E.C., a consensus became apparent. It was obvious during the entire discussion that there were many deeply emotional and personal feelings represented. Each member expressed these feelings freely. Initially, the greatest obstacle facing us was how to view the right to death or death with dignity, so-called euthanasia, with regard to the determination of death. During this period the work progressed slowly with many setbacks, since each person felt differently regarding the contemplated issues. We did, however, accomplish a substantial break-through when we reached that moment, with great insight, when we were able to state that the two ideas, the right to die and the determination of death, in our present 20th Century culture, were indeed different though not separate problems.

DETERMINATION OF DEATH DIFFERENT FROM THE RIGHT TO DEATH

The determination of death is an issue that can be left, as a matter of fact, to the expertise of the physician based on certain facts and scientific criteria. It seemed then that the work of the Commission was narrowed somewhat to the task of finding and defining those criteria. On the other hand, the right to die or death with dignity or euthanasia does not lend itself to precise scientific criteria, but is more a matter of one's morality, religious convictions, and social-economic status, more a matter of one's individual and personal lifestyle, whereas the determination of death is a scientific problem. The commission wisely decided that the right to die was not a matter within their jurisdiction and that they would not express a formal opinion regarding the matter, although each member did have a strong personal conviction. After much discussion and having reached this state of cohesiveness and confidence, I was asked to draft a regulation that would reflect the present state of our thinking. This was accomplished, and with some minor changes in the language the draft was accepted by the M.E.C. as the proposed regulation regarding the determination of death. The regulation as drafted was circulated to appropriate and in-

terested organizations. It was soon thereafter that the medical examiner, following the prescribed processing, announced a public hearing regarding the proposed regulation. As a matter of record, the medical examiner did more than the prescribed processing for the announcement of a public hearing. He placed notices in more newspapers than required by statute and sent personal letters pointing out the date and the topic of the first public hearing to be held in July 1976. The hearing, as earlier indicated, was certainly not oversubscribed. A rather curious outpouring of activity regarding the regulation from the Offices of the Governor of the State of Rhode Island and the Attorney General soon followed. Both offices broke their silence, and expressed a need for further information, and requested another public hearing. The Rhode Island Medical Society submitted its own definition of death at a meeting with the Attorney General in December of 1976. The second public hearing, as recommended following the December meeting with the Attorney General's Office, was held at the Department of Health, as was the first, on February 12, 1977. Based upon all the data received, formal Commission meetings, informal sessions, and public hearings, the M.E.C. tentatively plans to vote upon the proposed determination of death regulation in the fall of 1977. These are the salient features of the story as it is now brought up to date.

WHO IN SOCIETY SHOULD DETERMINE THAT DEATH HAS OCCURRED?

The present proposed determination of death regulation seems to embody certain advantages in that it leaves the determination of death where it has reposed all these past years, in the hands of the physician. Who else but the physician, by qualification, by professionalism, and by his strong interest should make the determination? — certainly not the State, hospital committees, parents, or electronic technicians. The criteria are flexible enough to be applied in all situations; they protect the indivdual citizen in that his death becomes his own personal event. Its determination is not arrived at for the good of other living persons so that his organs may be used for their benefit at his expense. That is to say, he is free from the fear and anxiety of supposing that his death may be hastened by application of criteria that are applied specifically so that his kidneys or other organs can be used for transplants before he is actually dead. These criteria are not explicitly designed to protect the physician from the threat of malpractice, but they are specifically aimed at protecting the patient from premature death and yet allow him to donate his organs if he wishes with the confidence that they are still healthy and useable for another human being. The regulation is morally neutral and infringes in no manner upon one's individual or collective right to death or life. It would seem that the mechanism of public hearings and citizen and regulatory committee dialogue is of paramount importance to the people of Rhode Island. It is at such public forums that these views, as expressed, may be corrected and opinions offered either for the present regulations or against them.

The regulation as it is now offered is as follows:

PROPOSED REGULATION

The Office of State Medical Examiners under the authority delineated in Title 23-4-3 (VIII), proposed the following regulation concerning the Definition of Death. The regulation is to read as follows:

"A determination of death shall be made by a physician duly licensed under Chapters 5-36 and 5-37 of the General Laws of the State of Rhode Island, as amended, utilizing the usual and customary information and procedures available to him, including evaluation of:

1. reflexes
2. ability to respond to painful stimuli
3. functioning of the heart and lungs
4. state of consciousness
5. brain activity

The above criteria may be used singularly* or in any combination that the duly licensed physician deems necessary to allow the conclusion to be reached in the deeply unconscious patient that circulation or respiration cannot now or in the future be restored to a spontaneous condition without the use of artificial support systems."

*This word has been amended to read "singly."

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History Of Otolaryngology In Rhode Island

Rhode Island Public Has Been The Chief Beneficiary Of The Emergence Of The Teaching Hospital

By Francis B. Sargent, M.D.

As a distinct specialty Otolaryngology began its existence in Rhode Island in 1906. Previously there had been eye and ear specialists and in the large medical centers, nose and throat specialists. Doctors Frank Bradford Sprague, Edward Sawyer Bacon, and Harlan P. Abbott were the pioneers in Rhode Island. Doctor Sprague cut his finger while performing a mastoid operation and succumbed to septicemia (1910). In that year the new operation, complete tonsillectomy, attained increasing popularity, and many physicians were attracted to the specialty by the big money promised by the new operation. The majority were disappointed, as family doctors mastered the technique and were unwilling to refer "their dollars and their reputations" to a specialist.

In the early twenties trained eye specialists, with one exception, practiced Otolaryngolog on the side. There were some forty physicians in this category. The ice was broken for the eye specialists when Doctor Joseph L. Dowling, returning from World War I, limited his practice to Ophthalmology.

EMERGENCE OF THE SPECIALTY

A few men trained in Otolaryngology confined themselves to that specialty. One was Doctor Frederick Nolton Bigelow, a graduate of the Otolaryngology residency at the Massachusetts Eye and Ear Infirmary. He became an associate of Doctor Bacon. Coming directly from the Massachusetts Eye and Ear Infirmary, the author became Doctor Bigelow's associate in 1923.

Among the many who practiced eye, ear, nose, and throat were Norman Darrell Harvey, Lewis B. Porter, George Wheeler Van Benschoten, and the prominent James William Leach — Frederick Tuthill Rogers combination. There was also John J. Gilbert, a graduate of both the Otolaryngologic and Ophthalmologic residencies at the Massachusetts Eye and Ear Infirmary. In Pawtucket there was a prominent eye and ear specialist, "T. Edward Duffee — not Irish."

Doctor Nathan A. Bolotow assisted Duffee in his ear, nose and throat work. Later, he became Chief of Otolaryngology at The Miriam Hospital. He became well known nationally for nasal plastic surgery.

Frank Cameron McCardle came to the Roger Williams General Hospital (formerly the Homeopathic Hospital of Rhode Island) as the first ENT specialist not engaging in Ophthalmology.

In the 1920's one either speedily built immunity to infection or became a candidate for the cemetery. Jeffrey Walsh, a graduate of the residency at Boston City Hospital, died of "walking pneumonia." Robert C. O'Neill,

(Continued on next page)

FRANCIS B. SARGENT, M.D. *Otolaryngologist; past president, Rhode Island Medical Society.*

a graduate of the Massachusetts Eye and Ear Infirmary practiced for five years and then succumbed to "walking pneumonia." Herman A. Winkler, a 1927 graduate of the Massachusetts Eye and Ear Infirmary, nearly succumbed to "strep throat" during his first year in practice. Michael J. O'Connor, a 1923 graduate of the Massachusetts Eye and Ear Infirmary, soon became Chief of Otolaryngology at St. Joseph's Hospital. While performing a tonsillectomy, a tenaculum jumped from a tonsil and bit his leg. After weeks of suffering he managed to escape with only a stiff knee. This type of accident cost many lives and legs.

Many of the eye, ear, nose, and throat specialists lacked various capabilities, but they furnished fierce competition. Their offices were open day and night, and they never refused a house call.

We did have a local O&O Society where the talkers presented "pot-boilers" and the listeners glared at each other. This society soon passed out of existence.

Ours was no specialty for weaklings. A typical day consisted of a morning in the outpatient department, in the hospital wards and operating room, or both. This was followed by office hours lasting well into the evening and house calls until midnight. An office attendant who failed to book patients after 5 p.m. was promptly discharged.

The successful general practitioner was similarly overworked, sometimes making as many as forty house calls. I know of two who succumbed to heart attacks in patients' homes. It was a question of survival. If one doctor refused a call, there were several who would respond. One night two very respectable doctors responded to an emergency call. A fist fight in front of the patient's house resulted. The winner saw the patient.

Private tonsillectomies before the advent of Blue Cross were usually performed in the patient's house. The anesthetist for the ENT surgeon was usually the pediatrician. For the GP the anesthesia was given by a friend. Two tonsillectomies in one day consumed much of the doctor's time. For example, one might be in Edgewood and one in Pawtucket. That would involve operating at 8 a.m. and 9:30 a.m. Postoperative calls were made that evening and the next morning.

The average specialist was performing gratis about a thousand T&A's a year in the hospitals. The Rhode Island Hospital booked 54 cases a week and still had a two year waiting list. Doctor Frank Mears Adams relieved the load by doing several hundred for the district nursing association in Bristol. I did the same for the Public Health Nurses in Smithfield, doing several hundred in the Smithfield Town Hall.

With the patient sitting up under ether anesthesia, the T&A could be performed in fifteen minutes or less, but combined with other hospital and OPD work, the Otolaryngologist was devoting an average of ten hours a week to charity.

BETA HEMOLYTIC STREPTOCOCCUS

The 20's was the decade of beta hemolytic streptococcus. By secondary invasion of the lungs, this germ had killed over ten million victims of Spanish Influenza. Ear infections were usually due to this organism. Earaches always seemed to begin at night and were taken seriously. An ENT specialist was called to the patient's home. Having diagnosed the problem, he awakened the periatrician or family doctor and called him in to administer gas or ether anaesthesia. A myringotomy was performed, and hopefully mastoiditis was avoided. In one instance while a distraught mother was holding a screaming child, the family dog grabbed my anesthetist's leg.

Many nose and throat specialists dismissed nasal allergy as a fad. As a result, much ill-advised nasal and sinus surgery was performed. The results were bad, and nasal surgery was discredited. Even a submucus resection became difficult to sell. Osteomyelitis of the frontal bone became the subject most discussed at specialty meetings. Before the discovery of antibiotics few of the victims survived.

Lung abscess following tonsillectomy was the subject of many papers in the 20's. The sitting-up operation for the T&A operation was attacked as the cause. This criticism had little merit. The organisms present at autopsy were a fusiform bacillus and a spirochete, the organisms of trench mouth. This was a disease brought back by the soldiers of World War I from "fighting in Flanders." It caught Americans with their defenses down.

The last case I saw was in 1932, fifteen years before the sitting-up position passed out of style in Rhode Island, five years before bronchoscopy became commonplace, and over a decade before the widespread use of antibiotics.

Significant progress has been made in the treatment and rehabilitation of both the profoundly deafened and the hard of hearing. Before the introduction of fenestration of otosclerosis, it was said with some truth that "no progress has been made in otology in the past fifty years." Actually, in 1920, the Rhode Island School for the Deaf was a model for the country. Children with no serviceable hearing were educated and trained by teachers well versed in teaching lip reading and in speech therapy.

There was also a free-standing League for the Hard of Hearing which offered social activities and lip reading to the hard of hearing. With improvement in hearing aids lip reading has been downgraded. The League became a hearing and speech rehabilitation center with greatly expanded activities. These activities are shared with the Hearing and Speech Center at the Rhode Island Hospital. While these advances are thought of as paramedical, otologists have played an important and indispensable role in their development.

The glamour of our specialty was in the management of ear infections and acute mastoiditis. The skill of the specialist was measured by his ability to determine when and when not to operate. When an ear infection appeared to be overpowering the body's defenses, it was necessary to wait until the infection was walled off. Knife-happy surgeons had no success in dealing with beta hemolytic streptococcus. Waiting required a psychological approach and patience. A delay of three weeks was usually advisable. A consultation and two x-ray examinations to reassure the family were necessary. These patients were very ill. Progression to septicemia, meningitis, and brain abscess was all too common.

ADVENT OF ANTIBIOTICS

The introduction of antibiotics removed the glamour from Otolaryngology. No skill or cleverness was necessary, just a prescription over the telephone. Unfortunately, a strong incentive to create active immunity in our patients was also gone.

With nasal surgery discredited, ear infections easily curable, and T&A's being performed by pediatricians and general practitioners, the very existence of our specialty was threatened. In the sitting-up position with ether anesthesia, almost anybody could perform T&A's and about everybody did.

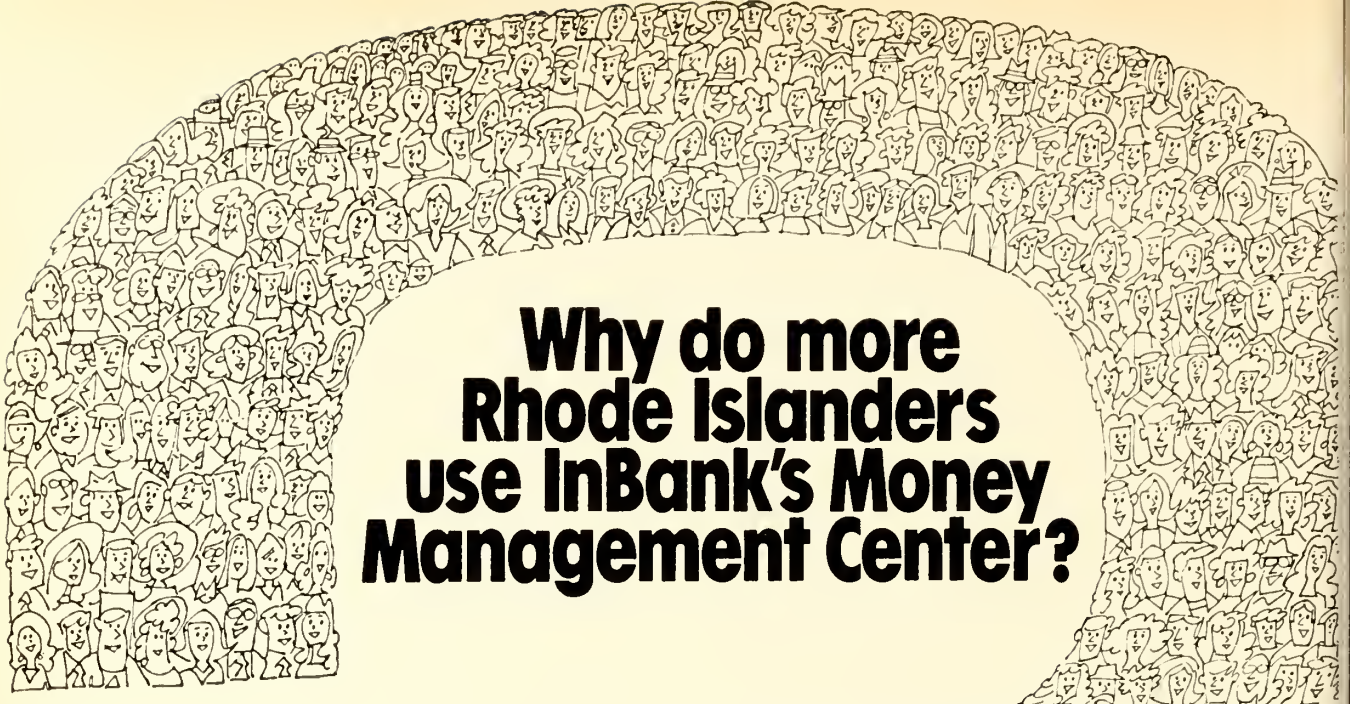
Massachusetts Eye and Ear Infirmary cut its residency quota and still failed to fill it. My associate, Doctor Linley C. Happ, left Providence to enter a residency in Ophthalmology. He was interested in food allergy, believing it to be the cause of the majority of human ills. Doctor Gordon McCurdy also left Providence. He had introduced to Rhode Island Hansel's management of inhalent allery and also endaural surgery under magnification as practiced by Lempert. These physicians had been perennial students and constituted our Endoscopy Department.

Our specialty had gained in one area. Cigarette smoking became popular in World War I. As a result of the popularity of this habit for twenty-five years, the management of pharyngeal, laryngeal, and pulmonary malignancy became important.

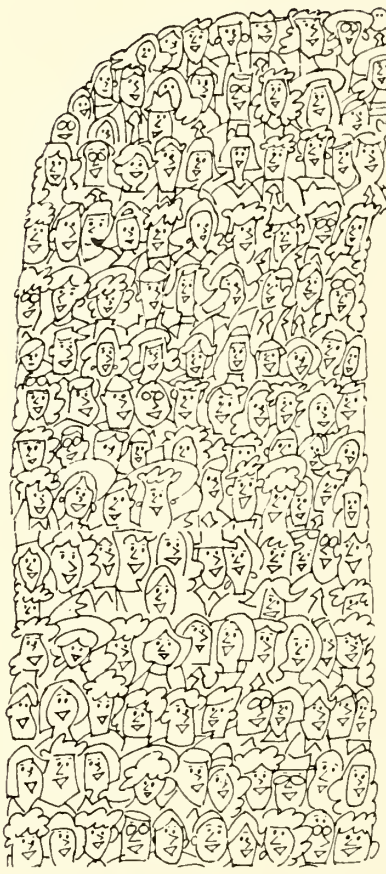
RESIDENT TRAINING COMES TO RHODE ISLAND

In the mid-forties help came unexpectedly. The trustees of the Rhode Island Hospital had become increasingly dissatified with the quality of medical care in Rhode Island. They proposed to convert Rhode Island Hospital from a community hospital to a teaching hospital. Oliver H. Pratt, director of the Salem, Massachusetts, Hospital was invited to serve as director and implement the change. A few physicians, notably Emery M. Porter, Alex M. Burgess, and Meyer Saklad supported the trustees. Wishing to promote the cause of Otolaryngology, I joined the group. The majority of the hospital staff, as well as the Rhode Island Medical Society, were in opposition. In 1949, as president of the Medical Staff, I was able to bring about the rewriting of the staff by-laws, greatly increasing the power of the chiefs of services. Doctors do not like being told what they may or may not do. Consequently, there was considerable bitterness.

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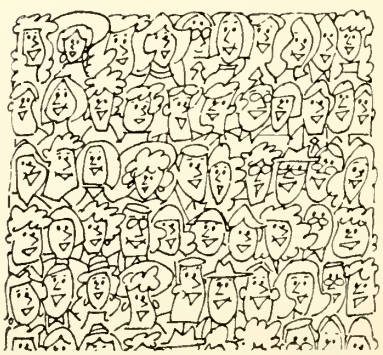
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Editorials

CIMETIDINE AND PEPTIC ULCER

The search continues for an ideal drug that will relieve ulcer pain, improve the healing rate, and decrease complications and recurrences. One such drug is now on the horizon. A team of British investigators led by James W. Black of University College in London developed the concept that histamine has two different receptor sites, one for allergies, which they designated as H_1, and another for gastric acid, which was termed H_2. It appears that all mechanisms of stimulating gastric acid secretion are mediated through the H_2 receptor.

The first generally available H_2 blocker studied by this group produced remarkable inhibition of gastric acid secretion lasting 24 hours. However, unfortunately, it also produced blood dyscrasias and had to be withdrawn. The newest H_2 blocker, cimetidine, has had dramatic beneficial effects not only in duodenal ulcer, but also in gastric and other acid peptic diseases. It is now being studied both in England and America in double-blind trials, so far with no deleterious side-effects.

In a series of studies in England an acceleration of healing of duodenal ulcer has been consistently demonstrated, and investigations now in progress in the United States are equally encouraging. Studies have shown that administration of 300 mg of cimetidine every six hours will heal an ulcer in four to six weeks in a large majority of patients. An American study demonstrates that cimetidine offers significant protection against aspirin-induced mucosal damage. Pretreatment with the drug reduces by three-fourths the amount of gastric fungal mucosal cell damage produced by a measured amount of instilled aspirin.

Permission to market the drug in the United States has just been announced. It is recommended for the short-term treatment of duodenal ulcer and in treatment of pathological hypersecretory conditions such as the Zollinger-Ellison syndrome. It appears to offer a quantum improvement in the treatment of peptic ulcer.

UNNECESSARY SURGERY

Published elsewhere in this issue of the **Journal** is a book review of a recently released volume titled **Costs, Risks, and Benefits of Surgery**, which is the first product of the Harvard Center for the Analysis of Health Practices and its Seminar in Health and Medicine. It is a welcome and important contribution to the economics of surgery and the analysis if costs vs benefits. There is much to be said on both sides of the question, and the literature is proliferating rapidly.

Among the more pernicious exercises were the hearings in 1975 on unnecessary surgery held by Congressman John E. Moss, Chairman of the House Subcommittee on Oversight and Investigation. Based on the much quoted study of McCarthy and Widner[1] of screening by consultants of recommended elective procedures, the committee through grossly faulty statistical techniques projected that there were 2.38 million "unnecessary operations"

(Continued on next page)

yearly costing $3.92 billion and 11,900 lives. These politically motivated statistical atrocities were promptly shot down by a number of authorities, including Ingelfinger,[2] Emerson,[3] Pfeutze,[4] Schlicke,[5] Francis D. Moore,[6] and others.

There is, nevertheless, room for a much more critical look at what we are doing or propose to do. Bunker et al in their **Costs, Risks, and Benefits** studies as described in the book review have developed one approach.

While the second opinion for elective surgery is an unproven and ambiguous device, there is, nevertheless, evidence that it may have some sort of merit. The original study of McCarthy and Widner should not be discredited out of hand, just as it should not be accepted as gospel. Massachusetts Medicaid now requires consultations prior to eight common procedures.[7] These range from T & A through hysterectomy, certain nasal procedures such as submucous resection, and disk surgery/spinal fusions. The denials in these groups were nearly 50 per cent, 20 per cent, 12 per cent, and 2 per cent respectively. While it has been pointed out many times that the consultant may be wrong, these statistics make one decidedly uneasy.

National Blue Cross and Blue Shield[8] have recently advised their plans to discontinue reimbursement for some thirty procedures (20 surgical and 10 diagnostic) in four specific categories: 1. new procedures of unproven value; 2. established procedures of questionable current usefulness; 3. procedures which tend to be redundant when performed in combination with other procedures; and 4. diagnostic procedures which are unlikely to provide a physician with additional information when they are repeated again and again. The twenty proscribed surgical procedures are 1. ligation of internal mammary arteries for angina pectoris; 2. radical hemorrhoidectomy of the Whitehead type; 3. omentopexy for portal obstruction; 4. kidney decapsulation for acute kidney failure or extreme hypertension; 5. perirenal air insufflation for x-ray visualization of the adrenals; 6. nephropexy for floating kidney; 7. circumcision in the female; 8. hysterectomy for non-obstetrical reasons; 9. supracervical hysterectomy; 10. uterine suspension; 11. uterine suspension with presacral neurectomy; 12. presacral neurectomy; 13. ligation of thyroid arteries as an independent procedure; 14 and 15. cutting of the fascia lata by stripper or by excision of the fascia lata, both for back pain; 16. ligation of the femoral vein for the postphlebitic syndrome; 17. excision of the carotid body for the treatment of asthma; 18, 19, and 20. thoracolumbar sympathectomy, lumbar sympathectomy, and splanicectomy, all when used for the treatment of hypertension. It is surprising that any of these procedures are still being performed. If the reader is dismayed at the backwardness of some areas of the country, it may be of interest that no less than 38 uterine suspensions were carried out in Rhode Island in 1976.

The diagnostic procedures that have been proscribed are: 1. BMR; 2. protein bound iodine; 3. icterus index; 4. ballistocardiogram; 5. phonocardiogram; 6. angiocardiography, using carbon dioxide; 7. angiocardiography, single plane, alone, or in conjunction with cineradiography; 8. angiocardiography, multiplane, alone or in conjunction with cineradiography; 9. angiography, coronary, single view (except in emergency situations); and 10. angiography of the extremity, as a routine diagnostic procedure, when not in contemplation of surgery. Additionally, the American College of Surgery has identified two new procedures as of unproven value: fabric wrapping of abdominal aneurysm and extra-intracranial arterial bypass for stroke.

The Blue Shield Association estimates that the cost of the 30 listed procedures in 1975, the last year for which accurate figures are available, was $27.4 million.

The authors of **Costs, Risks, and Benefits** predict[9] that, if national health insurance is enacted, the increased costs will impel Congress and the public to make such analyses as they have initiated. They further anticipate that "the framework should be built in the next three to five years" to provide the necessary cost-benefit and cost-risk determinations.

Since the resources to pay for medical care are finite, it is most certainly incumbent upon the profession as a minimum to find a means of eliminating useless or obsolete surgical, therapeutic, and diagnostic procedures. To

perfect and hasten the identification of such procedures, Bunker and his colleagues appear to have shown us the way. Much more work needs to be done in developing and perfecting the methods, but this now appears to be in prospect, with eventual extension to all aspects of medical practice. It is getting to be an urgent task.

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DIABETES IS DIFFERENT

Diabetes is very different from any other chronic disease, in that it requires detailed care and attention for decades. As we tell the patients in our diabetes teaching classes: "Diabetes is a lifetime business."

Diabetes has replaced lues as the great mimicker of diseases. In the course of its natural history it can involve all systems of the body. The evolving complications will require a multidisciplinary approach to control. Just as the complications ramify into many branches of medicine, so does the disease radiate into the patient's surroundings.

It affects and involves the whole family socially, psychologically, and medically. The wife of a diabetic husband prepares his diet, injects the insulin when her spouse is disabled, takes care of his feet, and helps him around. A child must know the diet restrictions imposed on his sibling. The entire family must know the signs and symptoms of hypoglycemia, how to prevent them, and how to render life-saving first aid. Furthermore, diabetes can be present in several members of a family, old and young, at the same time. Thus, "diabetes is a family business."

Diabetes is very different in its onset and natural history from other ailments and requires very different medical management. Its diagnosis requires thorough history taking, a good physical examination, and, in most instances, rather simple laboratory studies. But that is about where the easy road ends. As soon as the diagnosis is made, teaching has to start, teaching not only of the patient, but also of the closest family members: the spouse the parents, the siblings. Where to do the teaching? If the diagnosis is first made in the hospital, only the basics can be taught there: testing the urine for sugar and recording the results, the simplest elements of the diet, and the first steps of insulin administration. The first shock of the diagnosis, the hurried atmosphere of the hospital, the short stay, possibly unpleasant encounters do not make the mind amenable to the absorbing of much more teaching. The physician's office or special group teaching classes organized in the community provide a relaxed atmosphere where the patient and his family can be indoctrinated with the know-how of diabetic care. This teaching often involves the combined efforts of the physician, the diabetes teaching nurse, and the dietician.

The physician's office, however, will continue to be the mainstay of diabetic teaching. Even after the patient and his nearest family members have completed their teaching course, its substance has to be recapitulated and new knowledge conveyed at each office visit for years to come. Over and over again one must ascertain that urine testing is performed correctly and regularly; that the diet is well understood and followed as closely as possible, making adjustments as the need

(Continued on next page)

arises; that foot care is done properly and routinely; that the antidiabetic drugs are taken as prescribed; and that insulin is administered correctly. The following of this check list, the teaching, and the recapitulations are endless, just as the disease and its complications are seemingly unending. Diabetes is indeed a lifetime business.

JOHN M. BLEYER, M.D.

MORE ON BURN TREATMENT[5]

Doctor William E. Lockhart of Alpine, Texas in a paper published in this issue of the **Journal** makes a good case for the silver nitrate treatment of burns in areas distant from burn centers. The majority of burns, he believes, occur more than 100 miles from a burn center. The nearest to Alpine, in fact, is in Dallas, 500 miles away. Such distances are difficult for us to conceive in tiny Rhode Island. There is a distinction between a "burn center" and a burn "unit" or "facility." The number of true burn centers is small (eight at the most recent accounting) and they do not have the capacity to treat more than a fraction of the thousands of burns that occur annually in the United States. Many large hospitals have a burn unit or service which would not fulfill the criteria of a burn center and may in fact offer little more than is available in Alpine. There are some 155 of these burn units in the United States.

Of the three most widely used topical agents since World War II — mafenide (Sulfamylon®), silver nitrate, and silver sulfadiazine (Silvadene®) — mafenide has gradually been superseded by silver sulfadiazine, and silver nitrate has fallen into relative disfavor. The most recently proposed topical agent, cerium nitrate (cerium is a rare earth), may yet be the most promising topical agent of all. It is particularly effective against gram negative organisms including pseudomonas and against fungi, and, according to Monafo, when used together with silver sulfadiazine has a synergistic effect against gram positive organisms as well. It will prevent gram negative bacteria and fungi from colonizing extensive burns for as long as five weeks or more. The use of cerium nitrate was associated with a nearly 50 per cent reduction in the anticipated death rate. Monafo still carries out tangential excision, of which he is an advocate, during the first five days.

Monafo admits, however, that silver nitrate, after 10 years of experience, is still efficacious and safe clinically. Artz likewise maintains that silver nitrate will do well in instances in which infection of the burn wound is not well established.

Yet it is probable that in the course of time something less messy than silver nitrate will fill the bill in remote Alpine, Texas.

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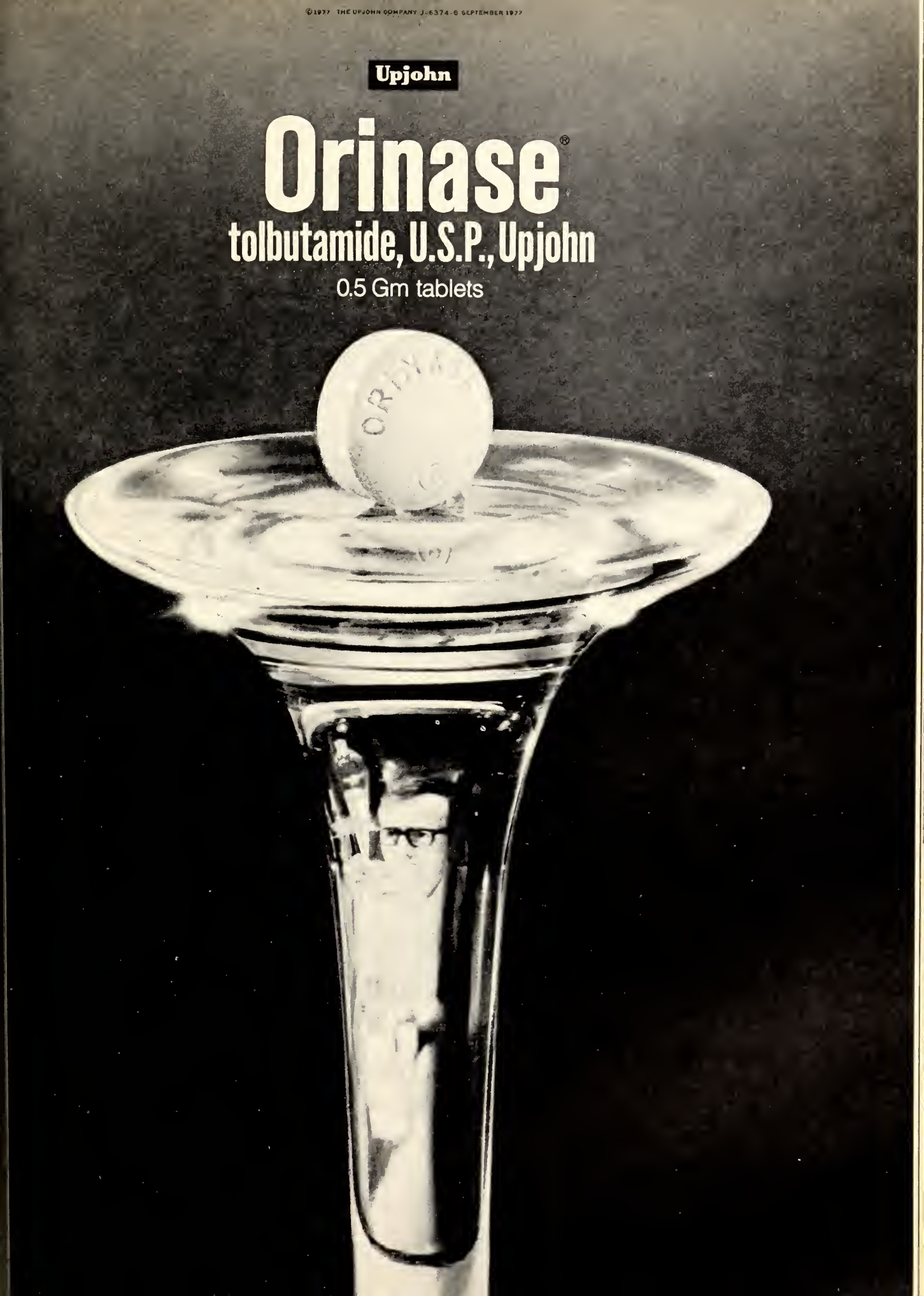
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Editor's Mailbox

INSECT BITES

To the Editor:

Again this year I am compiling a Biting Insect Summary and would appreciate any case reports of unusual allergic reactions, especially systemic (sneezing, wheezing, urticaria) to bites of insects; i.e., mosquitoes, fleas, gnats, kissing bugs, bedbugs, chiggers, black flies, horseflies, sandflies and deerflies.

I would like physicians to supply me with case reports of those patients who have had unusual reactions to such insects. Include in your reports the type of reactions (immediate and delayed symptoms), treatment, the age, sex, and race of the patient, the site of the bite(s), the season of the year, and any other associated allergies.

If skin tests and hyposensitization were instituted, I would like the report of both. Please note that it is the biting (not stinging) insect in which I am interested.

If you have found any insect repellent, local treatment, or insecticides of value, I would also appreciate this.

Please send this information to the following address:

CLAUDE A. FRAZIER, M.D.
4-C Doctors Park
Asheville, NC 28801

To the Editor:

Doctor Frazier's inquiry re insect bites (**RIMedJ** 60:317, Jun 77) is extremely significant. More persons by far die of insect bites than of snakebite. I do not have the statistics that he is requesting, but I have had a lot of experience with the problem.

Intense in my memory is a beautiful young girl who was given 0.5 ml of 1:1000 epinephrine and died suddenly, presumably from ventricular tachycardia. I did an autopsy that revealed nothing. Since then I have always given 0.5 ml of phenylephrine, which does all for anaphylaxis that epinephrine does and is less likely to precipitate ventricular tachycardia. I keep phenylephrine ampules ready when administering snake antivenin.

For persons at risk I prepare a kit rolled in clear plastic to be kept in the bottom of a woman's purse or in the glove compartment of a man's car. It consists of two ampules of 1 per cent phenylephrine 1 ml, two syringe-needles, two sealed alcohol swabs, and some tablets of Naldecon® (a combination of phenylephrine, phenylpropanolamine, phenyltoloxamine, and chlorpheniramine), which is excellent sustained therapy for urticaria, a component of anaphylaxis. A most serious symptom is hoarseness, indicating glottic edema, which must be vigorously treated.

It is my opinion that a physician or an emergency room is too far away in time to save most of these cases.

WILLIAM E. LOCKHART, M.D., FACP
Alpine, Texas

Doctor Lockhart practices in Alpine, Texas near Big Bend National Park. For his views on Snakebite, see **RI Med J** 60:13-15, 51, Jan 77 — Ed.

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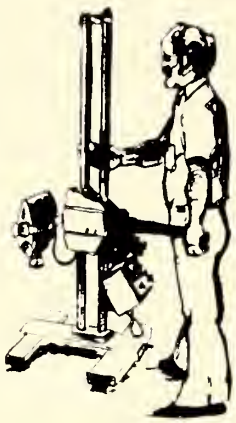
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Book Reviews

THE MEDICAL SCHOOL ADMISSION ADVISER: A COMPREHENSIVE GUIDE FOR THE STUDENT CONCERNED ABOUT GETTING INTO SCHOOL, by Marvin Fogel and Mort Walker. New York, Hawthorn Books, 1976. $5.95.

The authors of this book have correctly concluded that continuing interest in becoming physicians of so many college and precollege students demands the availability of some reliable guide, which can provide a perspective on the factors which positively and negatively influence the chances such students have for acceptance into medical school. Similarly, one can readily confirm the authors' impressions that a significant number of college premedical "advisors" offer their charges far too much misinformation and uninformed advice. Such advice is more likely to create obstacles to rather than facilitate admission to medical school. The critical question is whether or not the authors' response to these obvious needs prove adequate.

Clearly, there is enough substance, enough useful information extracted from the authors' experiences and observations to make this book a valuable addition to the resources of the student who aspires to become a physician. The chapter on interviewing alone far exceeds most similar renderings in value. It provides the basic elements from which the student can devise a formula that might transform an inexact and amorphous (for the student) process into a more orderly and well designed approach to the articulation of strengths and reaffirmation of credentials. As much as anything, it places the responsibility for persuasion clearly where it belongs — on the shoulders of the student seeking admission. The chapter on "Common Errors . . ." is also right on target, and the one titled "An Ideal Premedical Course" answers far more questions than it raises. Perhaps most importantly, the book is full of excellent references to additional sources of more detailed information. The admissions checklist in the appendix offers a framework from within which the student can plan a strategy and measure progress en route to the end point. All these things testify to the worth of this publication to the student.

In spite of these pluses, there are rough spots that reduce the effectiveness of the book. Although any information that is useful to premedical students, can be worthwhile to premedical advisors, the book will fail to meet the advisor's expectations. The critical relationship between the advisor and the medical school admissions officer receives only shallow attention. How meaningful it would have been to have identified the "common errors" made by advisors and how helpful it would have been to recognize that many premedical "advisor" operations are unstructured add-ons created by default and could be well served by a checklist and timetable that might add a sense of direction. The authors themselves raise advisor expectations in the introduction. Perhaps the reality is that two books are needed, one for students and one for advisors. There is an ambivalence about the authors' goal to serve both student and advisor which creates some confusion. This confusion is evident in the organization of the book, as sections dealing with process are carelessly interwoven with sections dealing with self-examination, motivation, and political or philosophic issues.

There are other annoyances seen from my vantage point. These may or may not diminish the usefulness of the book depending on the impact of the annoyances on the reader's perception of the authors' consistency and credibility. The chapter "Is Medicine Really the Career You Want?" asks an important question, but the yardsticks proposed for answering seem ill conceived, designed purposely to dissuade students by invoking commonly used political and philosophical arguments. It is disappointing to note that other occupations seem degraded. When income is greater than $50,000 for more than half the class of physicians, it is difficult to bring a student to the conclusion that medicine might not be a good paying profession. How easily we forget that plumbers, oil burner servicemen, and scores of others are also called in the middle

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of the night. Income comparisons between physicians and businessmen almost never consider all businessmen in a single class while doing precisely that for physicians. The claim that more "science majors" gain medical school entry than "non-science majors" is only valid when offered in the context of acceptance rates. The suggestion that persons deserving to enter family practice may have only five years of post-baccalaureate training seems at odds with the requirements of the academy of family practice.

In addition, the protestations about the changing conditions (external controls) for the practice of medicine are worth pointing out, but hardly worth crying about. Similarly, the financial aid proposals in chapter 7 are appropriate for legislators and advocacy groups, but hardly useful to students or their advisors. It seems paternalistic to refer to dentistry, osteopathy, and veterinary medicine as "paramedical" second choice alternatives to becoming a physician. Early in the book there are admonitions to put little value on statistics derived from MCATs and GPAs in relation to admissions success, but in later sections the authors themselves use the same kind of information to make their points. Some information is out of date (Brown is not a six-year school) and some of it is just incorrect (The New England Board of Higher Education is not in Wesleyan, Mass.). Finally, there is an urgent need to avoid confusing affirmative selection from a pool of qualified candidates with discrimination on the basis of sex or race.

In sum, this book is very worthwhile in spite of its shortcomings,. I plan to obtain copies to have available to undergraduates whom I advise. I also plan to share it with my colleagues serving on our own medical school admissions committee.

Levi C. Adams
Associate Vice President
(Biology and Medicine)
Brown University

COSTS, RISKS, AND BENEFITS OF SURGERY by John P. Bunker, M.D., Benjamin A. Barnes, M.D., and Frederick Mostellar, Ph.D. New York, Oxford University Press, 1977. $22.50

This publication evolved from a series of interdisciplinary seminars at Harvard University on Health and Medicine. The seminars, held over a period of three years, were initiated by Howard H. Hiatt, Dean of the Harvard School of Public Health, and Frederick Mostellar, Professor of Mathematical Statistics at Harvard University. They were jointly sponsored by the Center for the Analysis of Health Practices at the School of Public

See also Editorial, Page 437

Health and the Departments of Biostatistics and of Statistics at the University. The Surgery Group of he Seminar was primarily responsible for this book. Two years in the making, this 400 page volume, the work of 34 contributors and the three editors, is the first comprehensive treatment of surgery from the perspectives designated in the title — costs, risks, and benefits.

The editors state that the book is written for physicians and surgeons, public health planners, policy analysts, faculty and students of the medical schools, members of legislatures and their staffs, and others interested in the effective allocation of resources to medical care. It is estimated that the national expenditure for health care in 1975 was $118.5 billion, or 8.3 per cent of the gross national product, an increase of 10 per cent over 1974. The per capita expenditure was $547, or 10 per cent of the average personal income, compared with 5.6 per cent for national defense, 1.2 per cent for education, and 1.0 per cent for veterans' benefits and services. Per capita health expenditures increased by a factor of two and a half times between 1950 and 1973. During this period life expectancy increased by three years. The dilemma is posed in these words:

"We have no way of knowing how much of the effect is the result of medical care, and how much is the result of improved housing, improved nutrition, decrease in smoking or other nonmedical factors known to have pronounced effects on how long we live. Moreover, a large proportion of medical expenditures is very properly intended to achieve goals other than increasing the length of life; these include relief of disability, discomfort, and disfigurement—that is, substantial improvement in the quality of life. Although improvement in quality of life would be a welcome benefit from this large health care expenditure, no credible data on this subject exist; we do not know whether quality of life is getting better or worse, or remaining the same."

The editors remind us that this problem characterizes social programs in general. The lack of data for assessing social programs was described by Elliott Richardson as "a nearly fatal deficiency." Why surgery? the editors ask. They answer the question in this way:

"Modern surgery, with such techniques as cardiopulmonary bypass, organ transplantation, and total hip replacement, represents medical care at its greatest complexity and highest cost. The surgeon's successes are dramatic, but there are failures as well. This complexity of modern surgery, with the associated costs, risks, and benefits, has profound moral as well as economical implications, not only for the patients and their families, but also for the boards of trustees and hospital administrators providing the institutional environment. Additional problems arise for those responsible for the training of surgeons, anesthetists, and specialized paramedical personnel, as well as for the designers and manufacturers of appliances and instrumentation for modern medical care."

They conclude that "Surgical therapy, because of its discreteness, accomplishments, and cost, appears to be particularly suited for cost-benefit analysis."

The book is divided into five parts. Part I explains the Background and General Principles, introducing conditional probability, decision trees, and economic analysis, which constitute the quantitive tools for the formation of policy.

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Hopkins

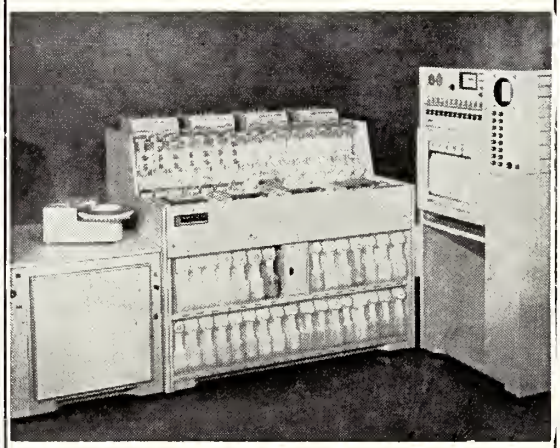
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Part II on Surgical Innovation examines several randomized controlled clinical trials.

Part III, Assessment of Risks and Benefits by Decision Analysis: Established Procedures, scrutinizes a variety of surgical operations.

Part IV pursues the same type of analysis for New Procedures.

Part V provides a Summary, Conclusions, and Recommendations.

At least one half of the book is devoted to arcane, sophisticated and technically complex statistical analyses, most of which is beyond the ken of this reviewer. The approach nevertheless is fascinating. The basic methods, surprisingly, are not new. In 1690 Sir William Petty, Professor of Anatomy at Oxford, published a study, titled Political Arithmetick, of the benefits versus the costs of transporting people outside of London for three months to avoid the plague. He concluded that "given the value of an individual and the cost of transporting people outside London and caring for them for three months, thus increasing the probability of survival, every pound expended would yield a return of £ 84." Thus, three hundred years ago human life was evaluated in terms of productivity, lives saved, program costs, and benefits to cost ratios, the basic concepts of cost-benefit analysis.

Various procedures and conditions are analyzed in the text. Mention of some of the conclusions drawn will give an idea of the approaches utilized.

Respecting tonsillectomy and adenoidectomy (T&A) the rate at which this procedure is performed in different Vermont communities varies from 4 to 41 cases per 1,000 children per year. The risk of T&A by age 20 ranges from 9 to 60 per cent. The similarity between the communities in terms of demographic characteristics, medical insurance coverage, and physician visit rates, indicates that variation in physician attitudes is the major factor in producing this wide range in incidence of T&A operations.

It is of interest, though not mentioned in the book, that there has been a steady downward trend in the incidence of T&As since 1930, and in fact the annual number of T&As dropped by 50 per cent from 1969 to 1976 (**PAS Reporter,** Vol. 15, No. 5, May 16, 1977).

Under the traditional method of surgical in-

novation by trial and error some procedures have stood the test of time, while others have been, or should have been, discarded. Among the latter are operations for ptosis and constipation and unproved operations on endocrine glands and the automatic nervous system, such as thyroid surgery for dementia precox and cervical sympathetic ganglionectomy for epilepsy.

Addressing the quality of life as an end result, papers on the treatment of cancer, peptic ulcer, orthopedic disabilities, and esophageal varices are analyzed. Since the patient often accepts the risks and discomfort of surgery with the expectation that the quality of his or her life will be improved, it becomes important to gauge whether much surgery achieves the ultimate goal of increasing the patient's productive and enjoyable life. Well designed clinical trials should take into consideration the long-run effectiveness of therapies.

Two chapters on duodenal ulcer develop this thesis further. While operative mortality is the easiest outcome to measure, recurrence rate, weight loss, dumping, and diarrhea are also important in evaluating results. Problems in reaching conclusions involve the definition of intractability, percentage of patients lost to follow-up, the methods of randomization, and sample size. Taking these criteria into account the authors found little difference between vagotomy-pyloroplasty and vagotomy-antrectomy, except in the matter of recurrence, where vagotomy-antrectomy appears to be superior. They caution against a firm conclusion in this matter, however, because of the substantial loss to follow-up in the various series analyzed.

Gastric freezing for bleeding duodenal ulcers is proposed as in example of a therapeutic innovation widely adopted before proof of its value was confirmed, but rejected when convincing results of randomized control trials became available.

Internal mammary artery ligation for angina is yet another procedure which was widely accepted before proof of its validity, but discarded when controlled series with a sham operation showed it to have mainly a placebo effect.

The best data on elective inguinal herniorrhaphy in the elderly (over age 65) indicate that the operation does not prolong life. The current low mortality for emergency operations appears to have eliminated the need for elective procedures for the purpose of saving life. It is an open question as to whether elective repair improves the quality of life. Such reexamination of established concepts can emerge from cost/benefit analysis.

A decision to operate for a silent gallstone ought not be based solely on life expectancy, but should be influenced by other considerations such as risk of surgical morbidity and the patient's state of mind. The data for these determinations are not available. Conclusions, therefore, must await the collection of relevant data.

Hysterectomy rates vary two- to three-fold between developed countries and the United States. The principal benefit of elective hysterectomy appears to be improvement in the quality of life. Society must decide whether to allocate funds for a procedure if it appears to be more of a convenience or luxury than a necessity.

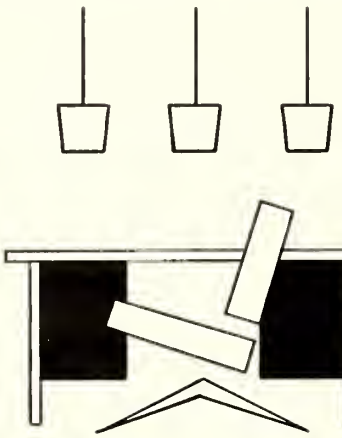
Regarding breast cancer, it appears that radical mastectomy has been established as the treatment of choice by tradition rather than based on clear-cut benefits. We must learn to modulate therapeutic intervention where the justification resides in beliefs held both by the physician and by the patient. The burden of proof, the authors point out, has often illogically been shifted from a demonstration that a procedure is effective to a demonstration or proof that a procedure provides no benefit, a formidable task. Shades of laetrile!

Construction of a model of end-stage renal disease treatment in terms of patient survival, extrapolating for ten years of therapy with either dialysis (home or hospital) or transplantation (living donor or cadaver), indicates that 52,000 to 60,000 patients will be in treatment at the end of the tenth year at a cost of $700 to $800 million, a formidable amount.

Analysis of the benefits of coronary bypass surgery led to the conclusion that, while surgery appeared to be the optimal choice for almost all types of patients considered, from

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the point of view of resource allocation, it appears to be considerably less attractive. Thus, the dilemma is posed that what may be optimal medical care for the individual patients may not be optimal when we consider collectively what wide application may be costing society. In commenting on the work of the Center and its seminar, President Derek C. Bok of Harvard University observed (**Harvard Medical Alumni Bulletin** Jan/Feb 1977) that "thousands of people have already received coronary by-pass surgery at a cost of at least seven to ten thousand dollars. Up to four million persons are potential candidates for this procedure and, under national health insurance, they might succeed in having these operations performed at a total cost to the country of twenty billion dollars. And yet, although some comparative studies have been made, no controlled clinical trials have been performed thus far to determine reliably whether the operation has any significant effect on preserving human life."

The final analysis has to do with the cost of intensive care. Conventional analyses hold intensive care to be expensive. The model exercise expresses the dollar cost of permitting one otherwise doomed patient to live for one year. While intensive care cost varies highly, depending upon the use to which it is put, the model indicates that much of the care actually shows a highly favorable cost-benefit ratio.

The following extract summarizes the general philosophy of this work:

"Since relatively small, though important, numerical gains or losses are to be expected from most innovations, clinical trials must regularly be designed to detect these differences accurately and reliably. When a systematic trial of a new thrapy is being considered initially, it is frequently subject to great optimism. The advocate for a new therapy may believe, for a number of specific reasons, that it will prove to be greatly superior to the standard and, indeed, preliminary informal experience may seem to provide good evidence for this. As our data show, this initial optimism though frequently warranted is often not justified."

Based on the seminar's three years of discussion, analysis, and study, the authors make four rerommendations:

I. Appropriate studies of the effectiveness of surgical treatment should be carried out for selected conditions, particularly those where uncertainty leads to professional disagreement.

II. Our grasp of the components of cost-benefit analysis and their interrelations, the values of the various data gathering techniques, and our understanding of the ethics of data gathering must be improved by theoretical and empirical work and by continued discussions in the public forums.

III. These principles of cost-benefit evaluation should be included as an integral part of the medical school curriculum; and their application to the assessment of the efficacy of medical care should be incorporated into clinical practice and continuing medical education.

IV. Information on outcomes as well as costs of medical care should be routinely formulated in a manner suitable for presentation to the public.

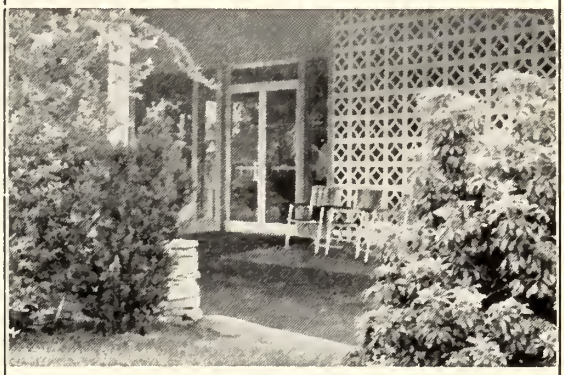
On the whole this work must be considered a very important milestone in approach to both benefits and costs. It emphasizes the importance of early and continuous evaluation of all new procedures and treatment regimes, and reevaluation of many older ones whose acceptance has been based largely on the prestige of an authority or merely on tradition. It provides new approaches to the study of cost-benefit analysis, and offers or suggests methodologies which can be followed, developed, or modified. The seminars will continue and extend their inquiries beyond surgery into all aspects of medical activity. They show promise of producing a system of study that can be incorporated widely into the medical school curriculum and hospital practice.

While the text alternates between highly readable segments and very tough going, it is a book which should be widely read by medical academicians, residents, students, and all those who are interested in a fresh approach to the evaluation of medical costs and benefits. We recommend it highly.

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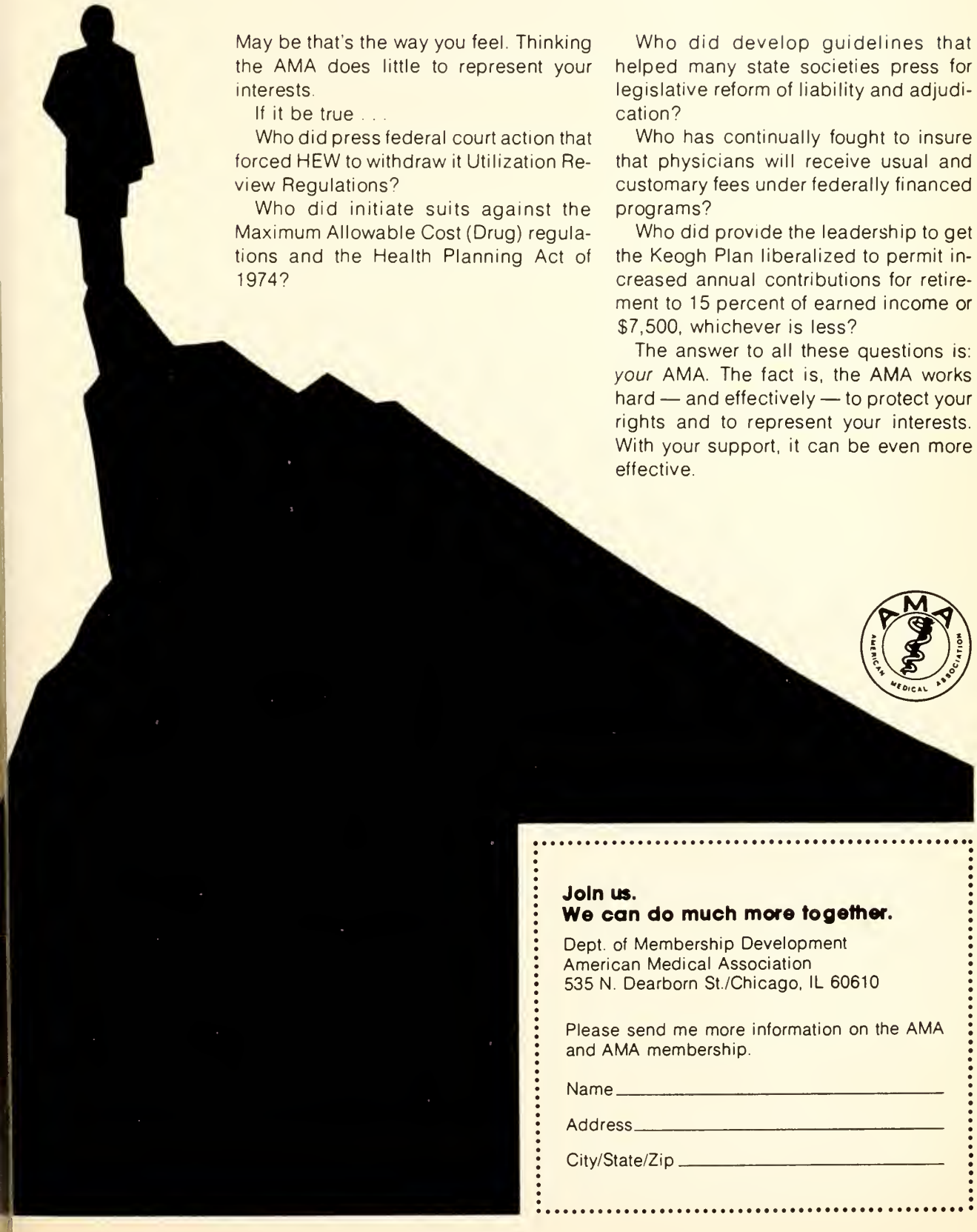
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ENDOCARDITIS ASSOCIATED WITH INDWELLING VENOUS CATHETERS

(Continued from page 418)

indwelling venous catheters[2]. It would seem likely then that endocarditis should also occasionally develop in association with such catheters. This association has indeed been documented in several case reports[2, 6-10].

We found that of 151 cases of endocarditis 6 were associated with the use of indwelling venous catheters. These 6 cases were identified on the basis of a temporal relationship between catheter use and the onset of endocarditis in the absence of another focus of sepsis.

The mechanism by which intravenous catheters led to the development of endocarditis was not apparent in this retrospective study. However, previous studies have shown that the incidence of catheter sepsis increases significantly when the catheter remains in place for more than 48-96 hours[3, 4]. The average duration of use of the implicated catheters in our 6 patients was 3.8 days. This suggests that catheter insertion sites should indeed be changed no less frequently than every 48 hours.

Strict adherence to aseptic technique in insertion and maintenance of indwelling venous catheters, as well as changing the site of catheter insertion at intervals of no more than 48 hours may help to minimize the risk of endocarditis in hospitalized patients.

SUMMARY

This is a 10-year retrospective study of 151 cases of infectious endocarditis at the Rhode Island Hospital. The clinical characteristics of these cases are summarized. It was found that 4.0 per cent were associated with recent prior use of indwelling venous catheters.

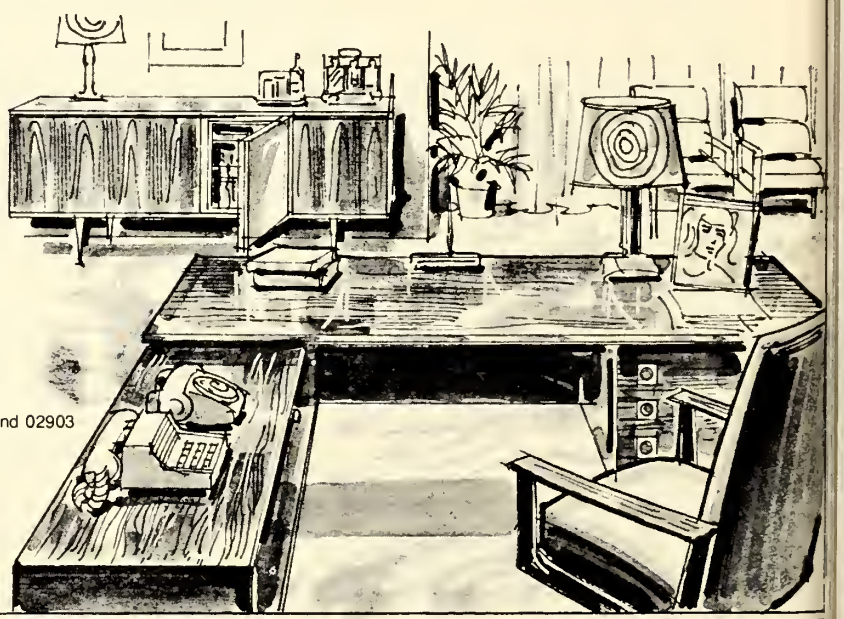
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ANOREXIA NERVOSA

(Continued from page 422)

COMMENTS

Four cases were reviewed for this paper (see Table), two of which are reported. The nucleus of the four cases is depression with superimposed anorexia nervosa. The four cases improved clinically on combinations of tricyclic antidepressants, lithium carbonate, or both with psychotherapy to the extent that the patients were able to go about their business of living and pursuing their respective life styles.

Anorexia nervosa is a complex condition which requires the best of our medical talents, energies, and patience to manage.

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HISTORY OF OTOLARYNGOLOGY

(Continued from page 435)

In the early fifties the teaching hospital became a reality, and the various chiefs hastened to implement their residency training programs. Anesthesia advanced to an important specialty. It helped us by making the T&A operation more difficult — too difficult for GP's and pediatricians. Other hospitals followed the lead of the Rhode Island Hospital, with some attempting the unpromising marriage of the teaching hospital with the community hospital.

With the support of the trustees the author sought and gained approval of the Board of Otolaryngology to establish a residency program at the hospital. Doctor Rudolph W. Pearson succeeded me as the Chief of Otolaryngology. With the aid of Doctor Edward B. Gammell, who had been trained in head and neck surgery in Philadelphia, he was a natural for the newer types of head and neck surgery which were coming into vogue. Doctor Gammell succeeded me at the Pawtucket Memorial, where I had been Chief for thirty years.

During this period the operation of stapedectomy for otosclerotic deafness was perfected. It was the most important advance in Otology in many decades. Mendell Robinson, who became Chief of Otolaryngology at The Miriam Hospital, earned a national reputation in this and other ear operations. Doctor Vartan Papazian, a graduate of the Rhode Island Hospital residency, became Chief at the (Pawtucket) Memorial Hospital as did Anthony D. D'Uva at St. Joseph's Hospital. Richard F. Judkins went to South County Hospital. Richard Rice, the first graduate of the residency service, went to Kent County Hospital, followed by George J. Jacewicz, a later graduate.

Doctor Francis L. McNelis succeeded Doctor Pearson as Chief and further expanded the teaching program. The program has freed the visiting surgeon from the burdensome routine of outpatient and hospital ward work. He has time for improving his skills in the specialty and for teaching in the residency program.

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EARLY TREATMENT OF BURNS

(Continued from page 426)

The method can be applied in remote areas (more than one hundred miles from a burn center) particularly in poor countries that lack transportation and burn centers, and even in the absence of a doctor, by a skilled layman. The method is simple, painless, free of danger, and economical, and requires as a minimum distilled water, silver nitrate crystals, and a spraying device, such as a Windex® glass spray bottle.

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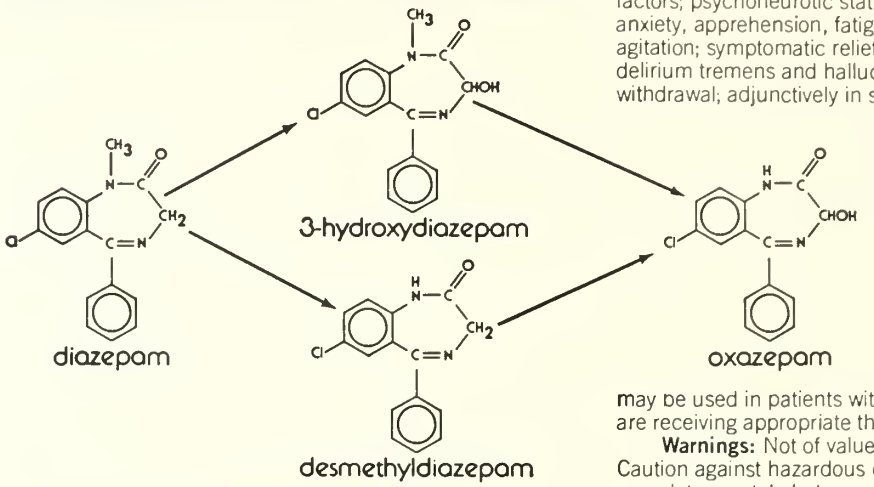
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22 "COMMUNICABLE DISEASE CONTROL AND THE PROSPECTS OF SEVERAL NEW VACCINES," Nicholas J. Fiumara, M.D., M.P.H., Director, Division of Communicable and Venereal Disease, Massachusetts Department of Public Health, and Clinical Professor of Dermatology, Boston University School of Medicine. A-V Conference Room, James Building, Newport Hospital, Newport, 7:30 to 9:30 P.M.

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DECEMBER

8 "CARDIOLOGY FOR THE CLINICIAN," Course Director, Richard A. Carleton, M.D., Chief, Cardiology Division, Memorial Hospital, Pawtucket, R.I., and Professor, Division of Biological and Medical Sciences, Brown University. Memorial Hospital, Richardson Auditorium, 7:30 p.m. Second Thursday of each month.

13 "EARLY DETECTION OF SCLEREDERMA AND OVERLAPPING SYNDROMES," Carwille LeRoy, M.D., Professor of Medicine and Head of Division of Rheumatology, University of South Carolina Medical School. Grand Rounds, Roger Williams General Hospital. 11:00 a.m. to 12 noon.

14 SYMPOSIUM ON THE MANAGEMENT OF ACID-PEPTIC DISEASE. Speakers will include: Basil Hirschowitz, M.D., Professor of Medicine, University of Alabama; Denis McCarthy, M.D., Director, Clinical Service, G.I. Intramural Program, National Institute of Health; William Silen, M.D., Professor of Surgery, Harvard Medical School. Rhode Island Hospital, 593 Eddy St., APC room 421, Providence, R.I. 9 a.m. to 1:30 p.m.

16 "WATCHING THE WALK," Arthur M. Pappas, M.D., University of Massachusetts Medical Center; Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12 noon.

JANUARY

12 "CARDIOLOGY FOR THE CLINICIAN," Course Director, Richard A. Carleton, M.D., Chief, Cardiology Division, Memorial Hospital, Pawtucket, R.I. and Professor, Division of Biological and Medical Sciences, Brown University. Memorial Hospital, Richardson Auditorium. 7:30 p.m. Second Thursday of each month.

20 "SOME GYNECOLOGIC PROBLEMS OF THE ADOLESCENT," Janet W. McArthur, M.D., Harvard Medical School, Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12 noon.

BROWN UNIVERSITY
DIVISION OF BIOLOGICAL AND MEDICAL SCIENCES
Providence, Rhode Island 02912
863-3231

A Message From The Dean

THE COSTS OF MEDICAL EDUCATION

The cost of medical education has risen monotonously in recent years. It is not our purpose here to express a judgment as to whether tuition is an active contributor to the inflationary tendency or contrariwise as to whether the rising levels of tuition are but a reluctant response by the medical schools to unrelated economic pressures. Rather, it is the intent of this message to detail the sobering costs of attending United States medical schools in 1977, to consider the available means by which these educational bills might be paid, and to reflect upon one long-range implication of these augmented costs. (See also RHODE ISLAND MEDICAL JOURNAL, November, 1976)

The current tuition costs in the New England schools of medicine are indicated in Table 1. The state-owned medical schools (Universities of Connecticut, Massachusetts, and Vermont) charge lower tuition but derive substanatially more monies from tax originated sources than do the private sector schools.

The means by which these tuition costs can be met are clearly limited. These include varying combinations of the following options:

(1) personal savings, family resources, and private patronage (loans and scholarship) or combinations of these.

(2) federal subsidy to the US medical schools (capitation). The amount of subsidy per matriculating student is determined each year by the federal government and is the same for all students enrolled in US medical schools.

(3) state subsidy to local medical schools.

(4) federal or state ownership of medical schools, usually with nominal tuition charges.

(5) federal funds to certain individual students in return for personal commitments

(Continued on Next Page)

TABLE 1

New England Medical Schools: Tuition and Fees

School	1976-77	1977-78****
A. Private schools		
Boston	$5,300	$5,800
Brown	5,041*	5,650**
Dartmouth	5,385	6,710
Harvard	4,478	5,265
Tufts	4,610	5,160
Yale	4,575	4,980
Average, N.E. private schools:	4,898	5,594
Average, alll U.S. private schools	4,788	5,532
B. Public schools		
Connecticut	$3,000***	$3,000***
Massachusetts	765	945
Vermont	4,401***	4,671***
Average,N.E. public schools	2,722	2,872
Average, all U.S. public schools:	2,897	3,275
Average, New England private and public schools	4,173	4,687

Average, all U.S.
*: 1st year tuition = $4,310; 2nd, 3rd, 4th year tuition = $5,285
**: 1st year tuition = $4,750; 2nd, 3rd, 4th year tuition = $5,950
***: Tuition for out-of-state students
****: Declared estimates; subject to change

to render service, the nature and location of which service to be determined by the granting agency (eg, United States Army).

Option 1 (personal payment augmented by endowment) was the classical funding mechanism for medical education until the exigencies of World War II prompted a reconsideration of the hitherto private domain of medical education. The armed forces specialized training programs (V-12 and ASTP) departed from this tradition of private transaction and became the instrument by which the federal government began to exert its first direct influence upon medical education.

It is not presently realistic to expect tuition to cover the bulk of medical education costs (which for most schools is in excess of $20,000 per student per year). One middle-Atlantic school, incidentally, will be charging tuition of $12,500 per year in 1977. At Brown tuition accounts for about one-third of the estimated cost of medical education.

Capitation to the US medical schools (Option 2) was begun by the federal government less than two decades ago. In 1976 this subsidy amounted to $1500 per student per year (representing about 8 per cent of the calculated cost at Brown and as little as 2 per cent of the cost in the more expensive medical schools). There is no apparent sentiment at the national level to raise the level of capitation payment; indeed, the very future of capitation is conjectural.

The level of local state help (Option 3) to the Brown University Program in Medicine ($900,000) represents a significant fraction of the total cost of medical education at this institution. In behalf of tax-oriented underwriting of medical education, each Rhode Islander contributed about $0.76 per year in 1976 and $0.94 per year in 1977. These amounts are substantially below the national averages ($3.36) or the New England average ($2.51). Table 2 summarizes the public funds (per state citizen per year) assigned to medical education in the various New England states.

In order to meet the increasing burden of tuition, therefore, our students have few alternatives but to rely upon loans, and upon individual agreements with various federal agencies which are interested in recruiting future professional cadres (Option 5). In the graduating class of 1977 twelve of the sixty students (20 per cent) owed the US armed forces or the Public Health Service a minimum of two years of service. In the class which will graduate in June, 1978, 16 of the 63 students (25 per cent) have already committed themselves to this form of professional activity.

TABLE 2

State Provided Funds for the Public and Private Medical Schools of New England Expressed as Tax Dollars per State Resident per year.*

	1974	1976
Connecticut	$2.25	$2.81
Massachusetts	0.94	1.32
New Hampshire**	0.34	0.09
Rhode Island	0.42	0.76***
Vermont	6.68	6.05
U.S., average	2.37	3.36

*: Source of Data J. Med. Ed. 51: 206, 1976. J. Med. Ed. 52: 607, 1977.

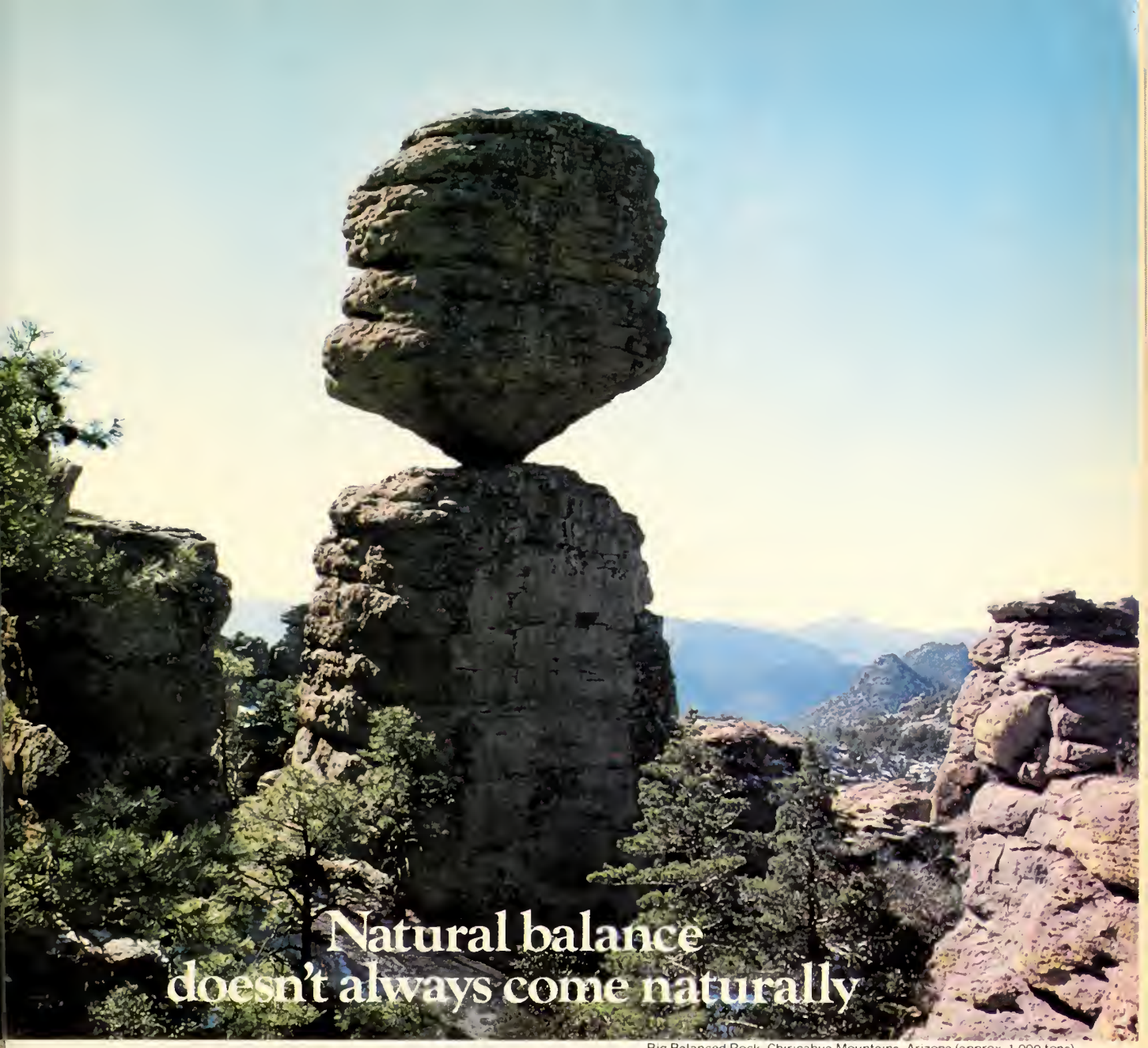
**: 44 states provide funds for the medical schools within their boundaries; the other six states (Alaska, Delaware, Idaho, Maine, Montana, Wyoming) have no medical schools in their territory, but contract with out-of-state institutions through capitation agreements. Of the 44 states with medical schools, New Hampshire has provided the lowest funding per state resident ($0.09/citizen/year), Rhode Island the next lowest ($0.76/citizen/year) and Texas the highest ($8.09/citizen/year).

***: This figure has risen to $0.94 per state resident per year in 1977.

We must recognize the compelling fiscal problems which the medical student faces today. In meeting their tuition obligations many of them will become deeply indebted, while still others will indenture themselves into some form of federal service with resultant loss of some of their latitude in choosing the direction and character of their professional practice.

What is lost sight of, however, is the increasing endangerment of that dwindling institutional species known as the private medical school. The start-up and maintenance costs of medical education are so formidable that very few private institutions within the past 40 years have ventured into this activity. Since World War II this country has seen the creation of 46 new and accredited medical schools, of which but four formerly private schools have been absorbed by state universities (Seton Hall, Syracuse, Buffalo, Long Island). The need for increasing numbers of competent physicians to fulfill the requirements of our population has been the

(Continued on Page 463)



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Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

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Usage in Children: Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy: See "Contraindications."

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* **Indications:** When the combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome. Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium sparing action of triamterene is warranted. (See Box Warning.) Routine use of diuretics in healthy pregnant women is inappropriate; they are indicated in pregnancy only when edema is due to pathological causes.

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Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

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(Continued from Page 462)
overriding reason for the creation of the recently established state-run medical schools. While the private schools may be able to accept more than a fraction of the responsibility for educating our future physicians, they frequently will provide the insight by which new paths in medical education and medical practice are illuminated.

Stanley M. Aronson, M.D.
Dean of Medicine
Brown University

⚓ ⚓ ⚓

CATCH 22

24 December 1987

Dear Dr. No 8, Section B, Panel III:

Before I choose you as my physician, I would like to advise you that I do not want the best medical services for me, my wife and children since we have to keep medical cost down, but if we don't get the best, I'll hold you liable.

Yours truly,
John Doe

Submitted by Joseph M. Zucker, MD

⚓ ⚓ ⚓

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Biological And Medical Implications Of Nuclear Power: Introduction

By A. S. Glicksman, M.D.

This symposium grew out of three premises. First, the utilization of energy by our society will continue to increase well into the next century. There is no indication at this time that we will decrease our power needs. Secondly, sources of energy other than fossil fuel will have to assume an increasing importance in supplying our energy needs. And thirdly, nuclear energy over the last quarter century has been shown to have the potential of supplying a significant fraction of our energy requirements for the future.

And herein lies the dilemma. As nuclear energy moves beyond the demonstration stage to become a major contributor to our energy resources, it brings with it a set of problems which other traditional sources of energy have not been asked to solve in advance or, for that matter, ex post facto. These problems may be real at this time, may be potential for the future, or may in fact be hypothetical. Be that as it may, as members of society, as physicians and researchers, we need a sufficient fund of information to deal with these problems responsibly and intelligently. What we do not need is a series of emotionally charged invectives, or yet another shrill voice denouncing this or supporting that.

In the development of this symposium, our goal has been the presentation of a set of information which would be useful to us all as we attempt to resolve the important societal implications of the premises set forth above. What is needed is the information which can be used to make valid judgements in appropriate perspective of our needs, resources, and hazards. Three leaders of thought, internationally esteemed scientists, have come to Brown this morning to help develop the informational base to deal with the real problems of the existing and projected nuclear power program.

Doctor Victor Bond has been a member of the Medical Department at Brookhaven National Laboratories for twenty years. He currently serves as the Associate Director for Life Sciences at Brookhaven. He has contributed extensively to the field to which he has been asked to address himself, the biological effects of ionizing radiation.

Doctor Robert W. Miller has been Chief of the Epidemiology Branch of the National Cancer Institute since 1961. His long-standing studies and associations with the Atomic Bomb Casualty Commission have resulted in many of the definitive studies of the epidemiological aspects of irradiated populations.

Doctor Bernard Feld is Professor of Physics at the Massachusetts Institute of Technology,

(Continued on Next Page)

Read at the symposium on Biological and Medical Implications of Nuclear Power, Brown University, March 9, 1977

ARVIN S. GLICKSMAN, M.D., *Professor of Medical Science, and Chairman, Section on Radiation Medicine, Division of Biological and Medical Sciences, Brown University; Chairman, Department of Radiation Oncology, Rhode Island Hospital*

where he has been "in on the creation" of the nuclear age, having been a member of the Manhattan project and a group leader of the MET Lab, both at Chicago and Los Alamos. He was one of the very early scientists who became concerned with the social responsibility of science. He is a charter member of the PUGWASH Group, and a co-worker with Leo Szilard on the Council for a Liveable World. He is the current editor of the Bulletin of the Atomic Scientists.

The Brown University Organizing Committee consisted of Professor Russell Peck, Department of Physics; Professor Albert Wessen, Community Health and Sociology; and myself. We are pleased to acknowledge the considerable organizational effort of Mrs. Wilma Allen of the Office of Continuing Education of the Brown University Program in Medicine and the financial support of the New England Power Company to bring this symposium together.

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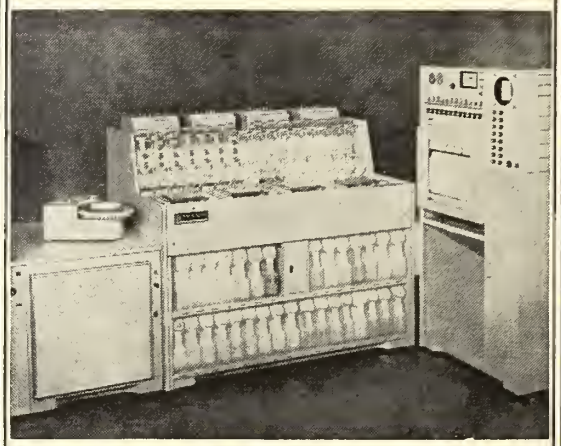
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I. Biological Implications Of Radiation

With Routine Reactor Operations Low Dose And Dose Rates of Radiation Exposure Should Produce No Detectable Effect

By Victor P. Bond, M.D.

My subject matter deals principally with the biological effects of radiation, and I shall first cover, very briefly, some facts about the cellular effects of radiation and the early effects of radiation on man. Then I intend to deal principally with what concerns us here mainly today, that is, the potential late effects of radiation.

We are in a medical environment here and I think that many of you are familiar with the uses and effects of radiation in one form or another. Many of you are closely associated with radiotherapy and know that radiation is delivered in very high doses to human beings as a means of control of cancer. You are also very well aware that radiation is used widely in diagnosis, both in the form of x-rays, which all of you have received and also in terms of procedures used in nuclear medicine. So radiation and its applications to human beings are not foreign to any of us.

Before I proceed further, since it is a mixed audience, I should be sure that we all

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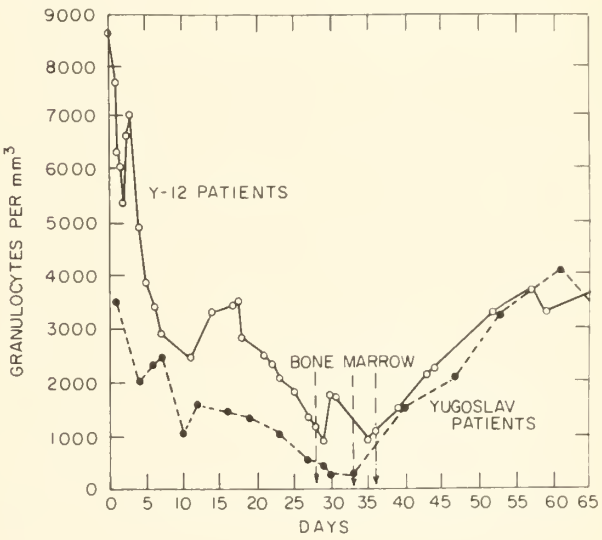


Fig. 1. Granulocyte count vs days after accidental exposure of human beings to large doses of radiation.

Read at the Symposium on Biological and Medical Implications of Nuclear Power, Brown University, March 9, 1977

VICTOR P. BOND, M.D., *Associate Director for Life Sciences, Brookhaven National Laboratory, Associated Universities, Inc. Upton, New York*

understand certain terms. It is necessary to speak of the dose of radiation, given commonly in terms of roentgens, rads, or rems, and in 1/1000ths of these units, namely, milliroentgens, millirads, or millirems.

Although there are real differences between these various terms, these are not of great significance to us here today. Hence we shall use the terms interchangeably. For purposes of general orientation the LD 50 for man, the lethal dose for man of radiation delivered in a short period of time is of the order of 350 roentgens or rad, or about 350 thousand millirad.

Radiation is not different from any other agent that we encounter very commonly. Namely, radiation like almost everything including water can be harmful and can be lethal if given in large doses in a short space of time.

In Figure 1 there is plotted on the ordinate the white count of human beings actually exposed accidently to radiation versus days after radiation. These are the leukocyte counts of patients exposed in two industrial accidents, the Y-12 plant accident at Oak Ridge and the research reactor accident in Yugoslavia. The graph gives the time course of the changes in these cells in the peripheral blood.

DIVIDING VERSUS ADULT CELLS

As background for this, radiation acts on cells, as do many chemicals that are commonly used in therapy in medicine, and it acts principally upon cells that are capable of division. There is a very old law, that of Bergonie and Tribondeau, put forth early in this century, that says that dividing cells are sensitive to radiation and cells that do not divide are resistant to radiation. And let me remind you of the old dictum laid down by Virchow and others, that the organs of the body are made up of cells and that many of these organs, such as the bone marrow, are made up of so-called renewal systems. There are dividing cells in these systems, and the cells are constantly in a state of being replaced or renewed. Contrary to this, organs like the brain in the adult are composed of cells which no longer divide.

Since the Law of Bergonie and Tribondeau says that the dividing cells are sensitive, we should expect those organs containing dividing cells to be sensitive, and this is true. Bone marrow has dividing cells that produce functional cells for the peripheral blood. As we should expect, then, the bone marrow is sensitive.

Now how does radiation affect these individual cells? It works on the DNA in the cells, and it can do many things. Just as chemicals do, it can kill the cells; on the other hand, it can produce injury to the cells which either can be lethal to the cell or may interfere with the ability of the cell to live and divide.

When one speaks of acute effects of radiation, early effects following large doses, what one sees is principally the result of cell death. This phenomenon will be familiar to those physicians present who use chemotherapy in any way. Chemotherapeutic agents by and large do essentially the same thing as does radiation, and organ damage is related to the death of cells.

There are more subtle changes that can occur in cells, and these can remain. Some of these can produce genetic effects. This subject will be covered by Doctor Miller.

The precise mechanism is not known, but some of these changes in cells can lead to the development of late effects in the exposed individual, the one of principal concern being malignancy. This subject will be covered following the discussion of early effects.

The effects on the dividing cells of the bone marrow are manifested later in the peripheral blood, as shown in Figure 1. Thus, as a result of happenings days earlier in the marrow, we see changes later in the peripheral blood. Initially, there is a period in which very little goes on in the peripheral blood; however, there are profound happenings in the bone marrow during this period.

At the end of this "latent period" of time, there occurs a decrease in the peripheral blood count. Then follows the so-called abortive rise, due to injured cells that can proliferate for a limited period of time only. Then, around 30 days, the nadir in these curves occurs. It is at this time that one sees the principal clinical manifestations of such exposure, followed by the recovery period.

What one sees clinically, then is very familiar to those clinicians who deal with aplastic marrow occurring either as a result of the drugs given or for reasons unknown. The problems are largely those accompanying neutrophil and platelet depression.

So there is no particular mystery about acute radiation illness. If one is familiar with aplastic anemia and the problems resulting from the aplastic marrow, then one knows well the manifestations of severe radiation injury. The problems are no different in many respects than are those resulting from the toxic effects of many other agents to which man is exposed, deliberately or accidently.

EFFECTS OF DOSE AND DOSE RATE

Effects described above were the result of large doses of radiation delivered in a very short space of time. Figure 2 indicates the effects of dose rate. All are familiar with the dose rate phenomenon in one way or another. One knows that, if one takes a large dose of aspirin, e.g., 100 tablets, in a very short space of time, serious illness or worse will result. One also knows that, using one tablet every few days, one can take hundreds and thousands of tablets and there will be no known manifestations. This is dose rate, and the same thing happens in respect to exposure to radiation.

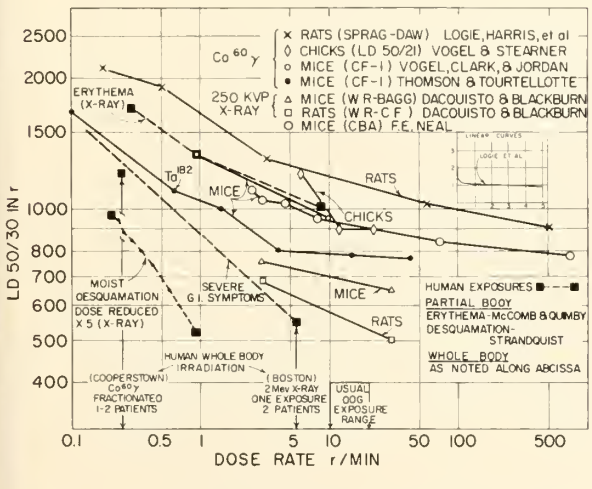


Fig. 2. The effect of dose rate for early effects in a number of biological systems. Doses delivered at low dose rates are substantially less effective than are the same doses delivered at high dose rates.

The same dose that would produce severe damage if given in a short time will produce no visible effects in the individual if given over a period of weeks or years (Figure 2). So dose rate is quite important.

Up to this point the effects of very large doses of radiation, encountered only in situations in which radiation is applied deliberately such as in some forms of radiotherapy or only under accidental circumstances, have been considered. The long-term or late effects of radiation are now considered. An individual who recovers from the early effects of large doses of radiation recovers completely to all intents and purposes. He is in the same situation as an individual who has had pneumonia, for instance or who has been exposed accidently to a large dose of any of a number of chemicals. If then one recovers, he is to all intents and purposes quite normal. However, that individual does have an increased probability — not a certainty — that at some point later in his life span he may have an increased probability of developing a disease of the types that occur naturally, e.g., he has some increased probability of developing a tumor.

There is an obvious but striking difference between the early and late effects of radiation. The early effects of radiation (or of chemicals) appear in every individual exposed. There is no question about it; if an individual receives a high dose of the toxic agent, he will without any question show changes in the bone marrow and blood and clinical manifestations at higher dose levels. The probability is 100 per cent. This is not the case with late effects, with which the probability is far below 100 per cent.

By far the largest proportion of individuals exposed to even high doses of radiation, if they survive the early effects, will so far as can be determined live out their normal life span. There will be little or no evidence at all that the exposure occurred. This is known very well from experience with patients treated with radiotherapy, i.e., recovery can be essentially complete and life can go on as though the exposure had never happened.

There is, however, an increased probability of late effects, and these must be dealt with in quantitive terms. Some of the most quantitative data come from Hiroshima and Nagasaki, where individuals were exposed to various doses of radiation. In Figure 3 the number of cases of leukemia is shown on the ordinate vs years after exposure. A large population of individuals was exposed, and the total number of leukemia cases versus time is shown.

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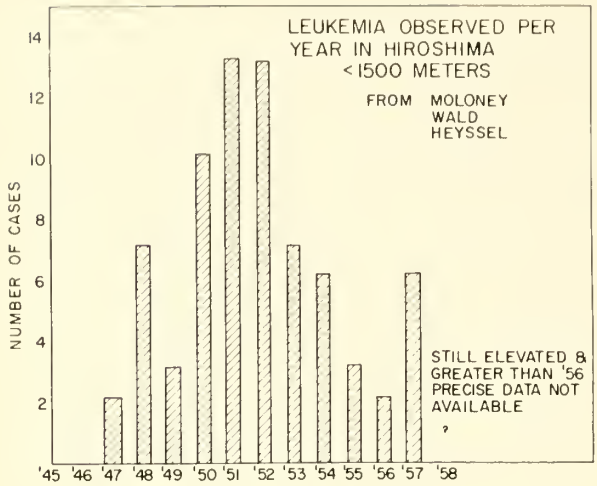


Fig. 3. Cases of leukemia vs years following exposure to radiation in Hiroshima.

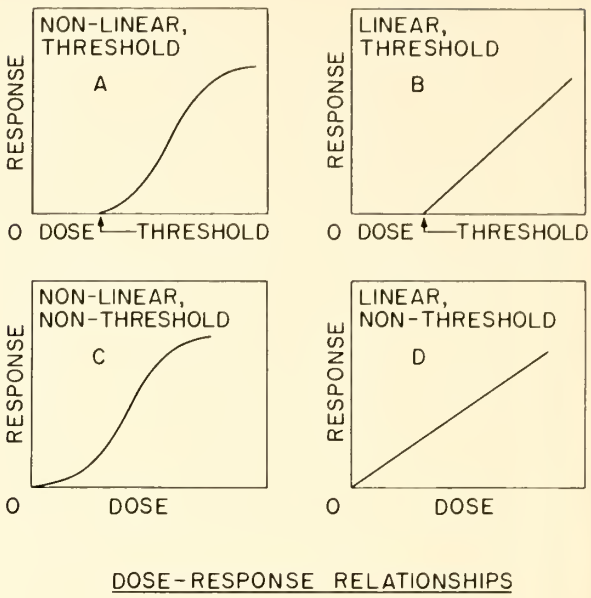


Fig. 4. Schematic representation of several possible dose effect curves, e.g., the tumorogenic response to different doses of radiation.

The phenomenon seen here is characteristic i.e., there is a latent period after exposure in which nothing happens. Then a so-called plateau occurs during which the incidence is relatively high. After the plateau period the increased incidence falls back to what it is normally.

What has been observed in quantitative terms in Hiroshima and Nagasaki has been known actually since remarkably soon after x-rays were discovered, i.e., that radiation is capable of increasing the incidence of cancer in those exposed. There is nothing new about the fact that large doses of radiation increase the probability of cancer in a large population.

So we have to consider in the context of our subject matter here today, namely, nuclear power plants, the doses that we may be dealing with. There is some radioactivity that comes out of the stacks of these plants. This is dispersed as it goes out from the plant, as smoke is dispersed. Figure 7 is intended to show graphically that the dose decreases as a function of distance, simply because the material is dispersed with distance and decays as well.

To become more quantitative, Figure 8 shows the rate of fall-off with the BWR and PWR reactors, the boiling water and

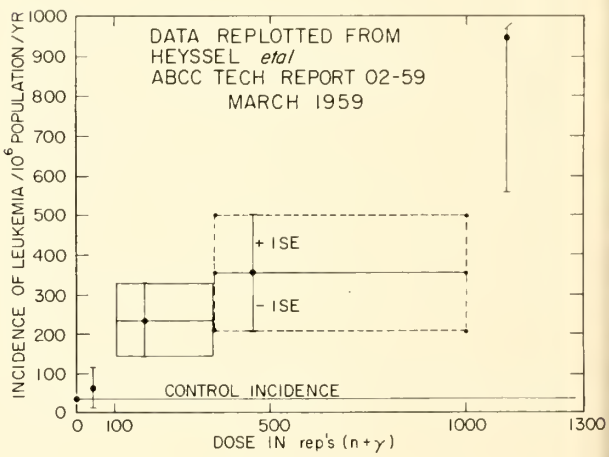


Fig. 5. Dose-effect curve for leukemia induction in human beings in Japan. This older plot (the term "rep" shown has been replaced by "rad") is used because it does show clearly the wide limits of error that exist for both the incidence and dose.

pressurized water reactors, respectively. The two curves are very similar.

What this means is that over about a 50 mile radius the dose rate falls off by three orders of magnitude--that is, by a factor of a thousand.

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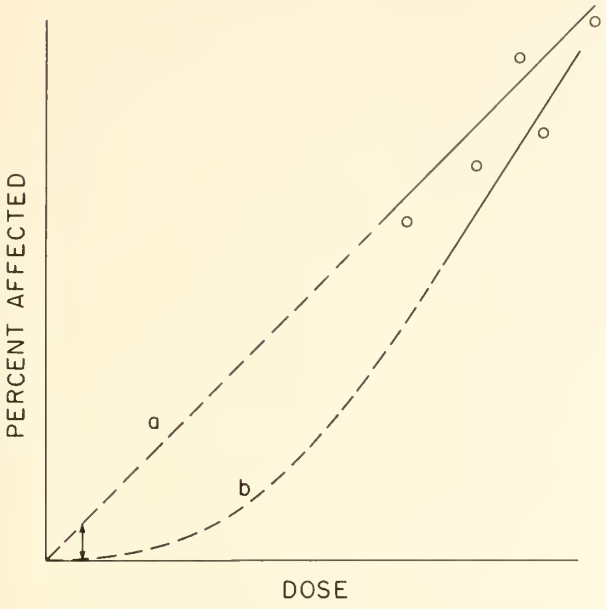


Fig. 6. Schematic diagram showing the approximate location of most actual data points (open circles) at high doses and dose rates, and linear (curve B) "extrapolation" (curve A) to derive estimates of possible effects at low dose where no observations exist. Curve C for low dose rate exposure has a slope identical to that of curve A at very low doses.

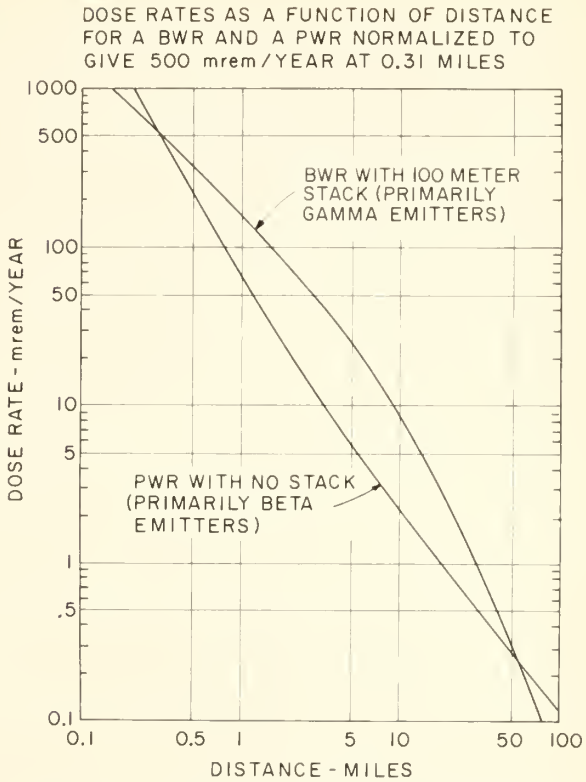


Fig. 8. Curves showing rapid fall of dose with distance from a boiling water or pressurized water reactor.



Fig. 7. Schematic indication of decreasing dose rate from reactor stack emissions due to both dispersal and radioactive decay.

Effect of High vs. Low Dose Rate Exposure,* Low-LET Radiation

Life shortening	
Beagles	12.8
Male RF mice	14.8
Female RF mice	2.2
Leukemia	
Male RF mice	7.2
Female RF mice	3.6
CBA & C57B1 mice	6.5
Female LAF_1 mice	5.0
Bone sarcoma, female CF1 mice	19.4
Breast tumors, S.D. rats	1.5
Thyroid tumors, L.E. rats	10.0
Human leukemia (radiologists)	2.5
Thyroid adenomas (fallout)	7.5

*Modified from Mays et al., 1975.

Table I. Effect of dose rate on radiation induced tumor formation. The numbers to the right indicate the factor by which the effect/rad at low dose rates is less than that at high dose rates.

The upper-limit dose that was allowed at the so-called "fence post", that is, right at the edge of the reactor site, used to be 500 millirem per year. That has been reduced and now is effectively about 5 millirem per year. And the dose falls off to about a thousandth of that value in 50 miles. That is the upper limit of what is allowed; the actual doses are much lower.

It is necessary to contrast these doses, a very small fraction of a millirem on the average, to what the population receives from other sources. Other sources of exposure to the population and the average doses received are shown in Table II. Natural background in Rhode Island is 100 to 150 millirem per year. A dose of the same order of magnitude is received from diagnostic x-rays. The radiation standard, the upper limit of the average dose to the population, is 170 millirem per year. From weapons testing and from other sources such as jet travel about 1 millirem per year is received. Nuclear plants contribute an extremely small additional increment, a small fraction of 1 millirem on the average. An individual right at the "fence post", of course, can receive up to 5 millirem per year. Averaged over a large population, the dose is very small indeed. The dose is so small that even with a large population the amount of disease one would expect in populations exposed to the reactor radiation is less than one case per year in all of the United States. In other words, clearly no detectable effect would result.

Additional elaboration on this point is in order. In Table III are shown the calculations of a graduate student at Yale, Mary Johnson, done in connection with the Millstone reactor in Connecticut. Using the doses from the reactor as shown, and the upper limit risk coefficients presented earlier, the author calculated the population size of human beings that for a 30-year study would be required to show any effect. For instance, within a radius of one mile in order to demonstrate an effect one would need about four hundred million people in that area; there are actually about fifteen thousand people living in the area. Clearly then if there is an effect, it is so low that one could not possibly detect it.

To this point only the reactor itself and routine emissions from it have been dealt with.

U.S. POPULATION EXPOSURE
YEAR 1970

	AVE. DOSE millirem/yr.
Natural Background	100–150.
Diagnostic X-ray	50–150.
The "Standards"	170.
Weapons Testing	3.
Jet travel, watches, color TV, etc.	1.
Nuclear Power Plants	less than .001

Table II. U.S. population average radiation exposures for the year 1970.

TABLE III

SAMPLE SIZE CALCULATIONS

Cancer Radiation Risk = 974.4×10^{-6} cases/rem/30 years

(from Japanese date)

Natural Cancer Risk = 1.5×10^{-3} cases/year

Cumulative Radius (miles)	Average Annual Dose (mrem)	Population size necessary for a 30 year study	Cumulative Population of Millstone area
1	0.34	4.05×10^{9}	180
2	0.85	6.48×10^{8}	6,090
3	1.1	3.87×10^{8}	15,300
4	1.6	1.83×10^{8}	32,900
5	1.8	1.45×10^{8}	54,400
10	1.6	1.83×10^{8}	119,000
20	1.0	4.68×10^{8}	324,000
30	0.70	9.56×10^{8}	559,000
40	0.37	3.42×10^{9}	1,400,000
50	0.23	8.86×10^{9}	2,920,000

Johnson, M. V., Holeman, G., Yale University

Table III. Population size necessary (column 3), vs population size existing (column 4), necessary to demonstrate an effect of routine emissions from a nuclear power plant.

SUMMARY
HEALTH EFFECTS PER 0.75 (1000MW-YR)

	COAL	NUCLEAR (LWR)	OIL	NATURAL GAS
Extraction	1 8 deaths 50–120 impairments	0.1 0.3 3 10	0 1 12	0.1 12
Transport	—	—	0.05 4 5	—
Processing	0.04 3	0.5 0.6–4 3	1 60	0.01 0.05
Transport	1 3 deaths 10–30	—	0.05 4 5	0.02 1.2
Electrical Generation	3–100 100	0.1–0.8 1.3 3.6	1–100 10–100	1
Waste Disposal	10 10–100	—	—	—
TOTALS	15–120 200–300	0.7–1 6 5–18	2–100 90–180	.13 13

Table IV. Relative health risks from different phases of the fuel cycle, of different modes of central station power generation.

Chance of Serious Injury or Death – Per Year			
Auto accident (disability)	1	chance in	100
Mortality attributable to smoking	1	" "	175
Cancer, all types and causes	1	" "	700
Auto death	1	" "	4,000
Air pollution	1	" "	10,000
Fire death	1	" "	25,000
The "Pill," death	1	" "	25,000
Drowning	1	" "	30,000
Firearms	1	" "	50,000
Electrocution	1	" "	200,000
Airplane round trip, New York City – San Francisco and return Radiation cancer risk	Less than 1	" "	1,000,000
Reactor Emanations; site boundary (5 to 10 mrem/yr.)	Less than 1	" "	1,000,000
Average for population within 50 miles of reactor	Less than 1	" "	10,000,000

Table V. Risk of exposure to radiation, relative to risks from other sources.

Time does not permit a discussion of the other parts of the fuel cycle. In Table IV, however, are given the risks associated with different parts of the fuel cycle, for different approaches to power production. These are the effects that would be expected per thousand megawatt plant per year. Note that of all the modes of central station power production available nuclear is among the safest and least damaging to health and the environment.

In Table V are indicated the risk of exposure to radiation relative to risks from other sources. This is presented from the standpoint of providing a suitable context. It is, of course, not proper to say that, because we are subjected to one risk, one has license to subject us to another risk. Also, some of these risks one can avoid, at least to a degree, if one wishes; others one cannot avoid.

OTHER EXPOSURES MORE HAZARDOUS

It is clear from the figure that the truly hazardous situations are those quite familiar to us--smoking, automobile accidents, injury or death from fires. Taking "the pill" incurs a real risk. The risk is small, but real. Radiation exposure of the public, particularly from nuclear power plants, is far down on the list of risky agents to which the public is exposed.

In the limited time available only an overall view of radiation effects has been presented. Radiation, like any other agent, can be harmful and even lethal if delivered at high doses and dose rates. As one goes down to very low doses and low dose rates, there are no observable effects. With respect to possible radiation exposure risks from power reactors, if one uses the upper limit risk coefficients at the very low doses and dose rates that are encountered with routine reactor operations, one would not expect to be able to detect any effect as a result of that exposure.

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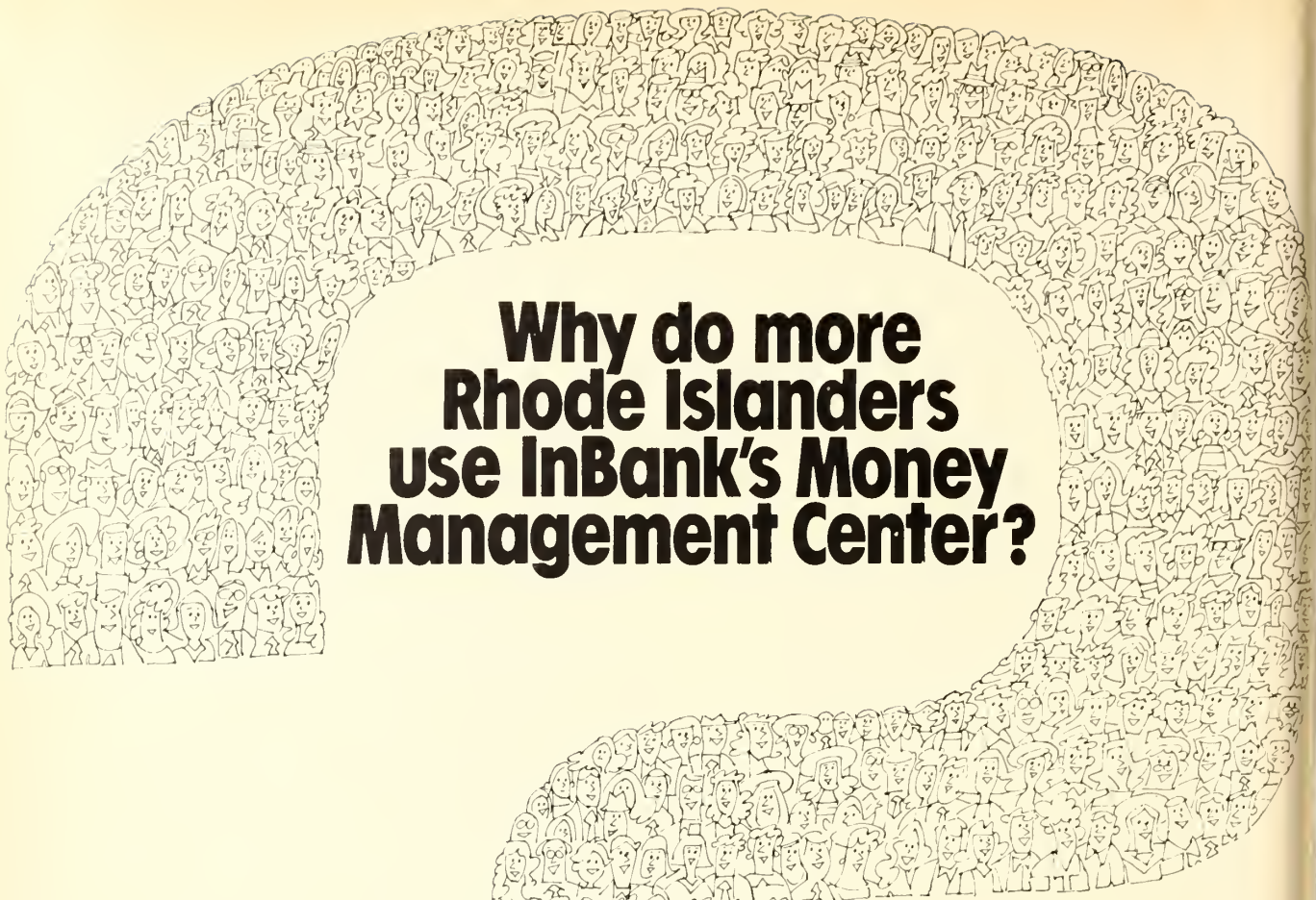
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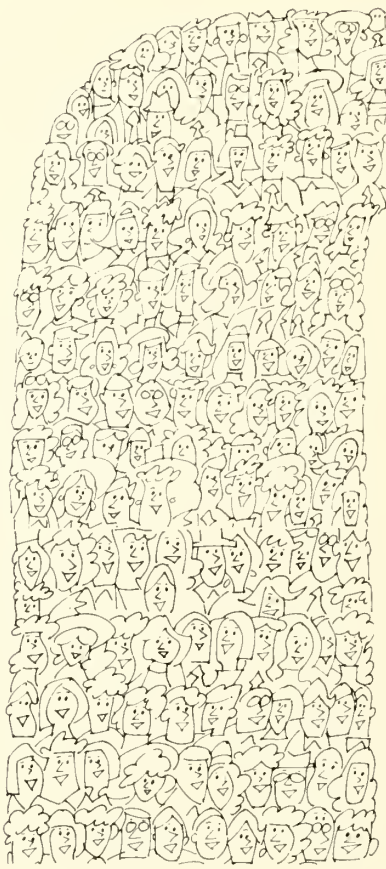


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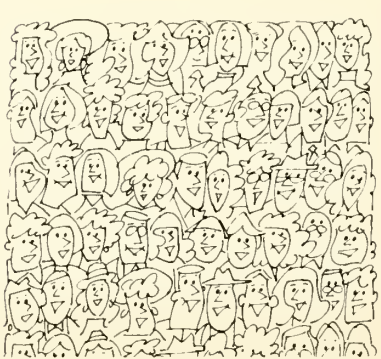
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II. Epidemiology Studies Of Irradiated Populations

Understanding Of Mechanisms Involved Is Neccessary To Draw Conclusions Concerning Effects Of Very Low Doses

By Robert W. Miller, M.D.

I should like to say at the outset, that I am a pediatrician by birth and will speak first about some effects of radiation on children.

CONGENITAL MALFORMATIONS

There is a peculiar feature to accounts of the effects of the bomb: effects of radiation on the fetus tend to be omitted by non-pediatricians.

Twenty-five years after Roentgen discovered x-rays the first case-report appeared describing small head circumference and mental retardation in a child who was exposed in utero when the mother received abdominal radiation for therapeutic purposes. And by 1928 Murphy at the University of Pennsylvania was able to accumulate 14 such cases from the medical literature. Then, by a very simple procedure (he mailed a questionnaire to his friends in obstetrics in various major hospitals of the US), he added 16 more cases that had not been reported, bringing the total almost overnight to 30. So it was to be expected that the same effect would be observed in Hiroshima and Nagasaki.

I should like to mention that the first observations of this effect were actually by retrospective study. Quite often restrospective studies are maligned because in looking backwards to get new information there may be problems in scientific design. Such studies, however, often give the first clue to an environmental agent that causes malformations, cancer, or other disease in man. There were heavy doses, therapeutic doses of radiation, given early in pregnancy to a susceptible organism, the fetus.

The effect in Hiroshima was proportionate to the dose. That is an important feature in implicating an agent in the cause of disease. The bigger the dose, the more frequent the effect. Not only was the effect more frequent, but the head circumference was more severely affected. The smaller it was, the lower was the intelligence of the child until, when 50 rad or more were received, the frequency of mental retardation began to increase. One can have a small head circumference and be a genius, but generally there is a correlation between the head circumference and intelligence.

Read at the symposium on Biological and Medical Implications of Nuclear Power, Brown University, March 9, 1977

ROBERT W. MILLER, M.D., *Chief, Epidemiology Branch of the National Cancer Institute*

The lowest dose that produced small head circumference was in the category 10 to 19 rad. That was the dose in air to the mother. To some extent this dose would be attenuated by her tissues as the radiation passed through them before it reached the fetus.

Now, this observation does not apply to radiation in medical use. The reason is that the effect was seen in Hiroshima at these low doses, but not in Nagasaki.In Nagasaki the effect occurred or was detectable only in high doses.

There are two major possible explanations for this difference in effect. One is that the bombs were different in the two cities. The bomb in Nagasaki contained essentially no neutrons, whereas that in Hiroshima did. Neutrons have a stronger effect, perhaps fivefold, than does gamma radiation. It is possible, although it is a little hard for me to believe, that the neutron exposure in Hiroshima accounted for this effect at low doses. I have the image of one neutron inside the skull of a fetus rattling around producing a lot of damage; hard to imagine, but perhaps that is the way it works. There was essentially no exposure to neutrons in Nagasaki, and there are no neutrons in medical radiation in hospitals anywhere for ordinary use.

The other possible explanation is geographic. Hiroshima is a wide area of flat land with no mountains dividing the city. Nagasaki is divided into four or five valleys. Perhaps the destruction, so widely distributed in Hiroshima, was associated with more infection and more malnutrition than occurred in Nagasaki, where support services were immediately available from neighboring valleys that were not affected by the bomb.

It is possible that there was an interaction of radiation with malnutrition and infection. Typhoid fever is known to have occurred in an epidemic in Hiroshima, but not in Nagasaki. The effects on Hiroshima may be due not to radiation alone, but to a combination of effects.

GENETIC EFFECTS

Germinal Mutations: In 1948 a Dropsophila geneticist named Doctor James V. Neel, who had gone to medical school and is a very good physician, was assigned by the Army to the Atomic Bomb Casualty Commission as its first, but temporary, director. Now it turns out that some of the best epidemiologists are not epidemiologists at all; he is one of the best, and he is not an epidemiologist. He invented a study that worked extremely well and had an excellent scientific design; it was designed to answer a series of questions, and did.

About 71,000 pregnant women were entered in the study. They were identified during pregnancy, before its outcome was known. This was done through an association of midwives, who brought information about each birth to the Atomic Bomb Casualty Commission.

The women's identities were ascertained when they applied for an extra ration of rice allowed during the pregnancy; 93 per cent of the pregnancies between 1948 and 1953 were identified in this way. A medical examination was performed on each newborn, and a reexamination was made of 40 per cent at 8 to 10 months of age to see if some disorder had developed in the meantime that escaped detection at birth. The results were distributed by five levels of radiation dose with respect to the exposure of each parent.

There were six measures of genetic effect. People usually think there is only one measure, congenital malformations; but actually there were six, and a seventh is in the works. First, of course, is congenital malformations, and the study was big enough to have detected an increase, if there was one, of twofold or greater; but it detected no increase. So the conclusion is that it was less than twofold. I think everyone believes on the basis of studies of animals and plants that radiation produces genetic damage. It simply could not be detected in the offspring of the atomic bomb survivors.

Again for the second measure, stillbirth and neonatal death rates, the increase would probably have been detected if it was greater than 1.8-fold; but there was no such increase. Regarding birth weight, no effect could be attributed to radiation.

For body measurements in infants at 8 to 10 months, no effect was attributable to radiation. Respecting the sex ratio at birth, at first there was thought to be a small effect. It disappeared with time and was probably of no significance. And, finally, mortality (deaths during childhood among children who had not yet been conceived at the time of radiation) showed no effect. Six measures of genetic effects, and no effects were observed.

The seventh involves new technology. It is the study by electrophoresis of amino acid substitutions in proteins and red cells. An attempt is being made to get this study underway. It is a more sensitive measure than those previously made of mutation.

Chromosomal Abnormalities: Until now I have spoken about germinal mutations — injury to the germ plasm, to the sperm, to the ovum. Now, I shall discuss injury to the body cells, i.e., somatic mutations, chromosomal damage. When in 1956 chromosones first became correctly countable and observable for abnormalities, they could be examined for the effects of environmental agents or of hereditary disorders. The first studies in Hiroshima were done in the mid-1960s by Doctor Arthur Bloom. He observed that, if the patients were under 30 years of age at the time of the bomb and their minimum dose was 200 rad, 34 per cent of the 94 patients he studied had complex cytogenetic chromosomal abnormalities — 34 per cent as compared with 1 per cent of a control group.

If the patients were over 30 years at the time of the bomb, the frequency of complex chromosomal abnormalities rose with age from 34 to 61 per cent in the heavily radiated group, as compared with a rise from one to 16 per cent in controls. If the patients were in utero at the time, and the maternal dose was at least 100 rad, 39 per cent of the 38 children studied showed cytogenetic abnormality, as compared with 4 per cent of the controls.

Now, an interesting feature here, unexpected and unexplained, is that it does not matter in what trimester of pregnancy the mother was exposed. The same effect was observed in the first third of pregnancy as in the second third or the third third. That is a surprise, because the cells under study, the lymphocytes, were not yet formed in the first trimester. The cytogenetic abnormalities are nevertheless seen 25 or 30 years after exposure. The precursors of the lymphocytes apparently were affected.

Chromosomal abnormalities are longlasting effects. No one expected the lymphocytes to be around that long. It was thought they would be cleared from the circulation, but they are there 25 or 30 years later. Comparable effects were not seen if exposure occurred before the baby was conceived.

LEUKEMIA

Whole-body Exposure: Soon after the discovery of x-rays in 1895 cases of leukemia were reported in radiation workers. The first case was detected about 1911, that is, about 16 years after x-rays were discovered. As is usual, the effect observed in man was then sought in experimental animals. We would hope it would be the other way around; that we would know it first from animals and then find or look for it in man. But, it was found in mice after the effects were known to occur in man.

Then again, by a very simple study (people used to think cheap and effectively, and they still can), by reviewing the death notices published each week in the **Journal of the American Medical Association**, two scientists independently, unaware of what the other was doing, studied the mortality from leukemia in radiologists and compared it with that for other physicians. The investigators found what they designated a 9-fold excess, but they forgot to correct for age. Yet there was a difference; the radiologists were in a young specialty and were therefore a younger group than physicians in general. When age was corrected for, the excess was about 3-fold.

By this library work, by looking at data compiled in volumes in the library, it was shown that radiation had induced leukemia in radiologists. It was to be expected, then, that when a prospective study was made, following up persons exposed to radiation in Hiroshima or Nagasaki at a single moment, they would develop an excess of leukemia, and they did.

There was a peak in leukemia occurrence six years after the exposure in 1945. Leukemia comes in different types which have different causes. Even a single cell-type, such as for example, lymphocytic leukemia, may have different diseases, all with the same clinical appearance. The peak in the acute leukemias diminished, and then may have recurred in 1958. The excess of acute leukemia continues until today.

Chronic myelogenous leukemia also peaked in 1951, but the peak was less marked, diminished with time, and disappeared in 1963. There was no subsequent excess of chronic leukemia.

The type of chronic leukemia observed is special. One form of chronic leukemia that has

(Continued on Next Page)



not occurred at all in any radiated population is chronic lymphocytic leukemia (CLL). CLL is in a category by itself with respect to cause. It is not caused by radiation, and it seldom occurs naturally in Japanese or in Chinese. It does occur naturally in the British, however, but did not occur excessively among British men exposed to therapeutic radiation for rheumatism of the spine. They developed myelogenous leukemia, but not chronic lymphocytic or acute lymphocytic leukemia.

Partial-body Exposure: Hiroshima survivors experience whole-body exposure. The British patients had only their spines exposed, so they received partial-body exposures, and a dose-response effect was observed.

The peak occurrence among the British patients, as in Hiroshima, was five years after the first exposure. The number of cases of leukemia was 52 observed versus 5.5 expected, a 10-fold excess. And there were other patients who developed aplastic anemia, probably undiagnosed leukemia, 15 cases observed versus less than one case expected.

Prenatal Exposure: I should like now to speak briefly about Doctor Alice Stewart's studies to which Doctor Bond has already referred. She examined the frequency of diagnostic x-ray to the abdomens of pregnant women, whose children had died of leukemia or other cancer in Great Britain, England, or Wales, and compared the frequency of such radiation exposure with that of mothers whose children had not developed cancer.

Doctor Stewart found that intrauterine exposures increased the frequencies of leukemia by 50 per cent, lymph-node cancers by 50 per cent, brain tumors by 50 per cent, kidney tumors by 60 per cent, other cancers by 50 per cent.

The regularity of the 50 per cent increase makes me suspicious. Can one agent induce each of these tumors that seem to differ in origin from one another by the same magnitude after intrauterine radiation exposure?

Doctor Stewart estimated that, if one million children were each exposed to one rad in utero, 300-800 extra cancer deaths would occur before ten years of age. In Japan, this hypothesis was tested through the use of data from Hiroshima and Nagasaki. There were 35,000 person-rads of exposure during intrauterine life. It was estimated that, if the fetal dose were half that amount, 18 extra cancer deaths would have been expected, with a lower limit of 5. But only one case was observed, as compared with 0.25 cases expected at the Japanese national rates. So there was no excess in Hiroshima. The hypothesis was tested; it showed no excess.

Data from New York State, Baltimore, and Minneapolis were pooled to study the effects of diagnostic exposure of the mother or father before conception with respect to leukemia in the child. It was found that, if the mother was exposed to diagnostic x-ray before the child was conceived, there was a 60 per cent increase in the frequency of leukemia. If the father was exposed — and that is very hard to explain biologically — the increase was 30 per cent.

Conformation of these observations was sought using data from the Japanese atomic bomb survivors. No excess of leukemia was found among 17,700 children whose parents were exposed within 2,000 meters of the bomb. Again, the test of a hypothesis was made in Hiroshima, and no effect was found.

It looks as if in hospital series, whether the exposure is pre-conception, intrauterine, to the mother, or to the father or whether it has to do with Down's syndrome, one sees the same 50 per cent increase, which makes one wonder if a flaw in the methods of the study might be responsible.

As Doctor Bond correctly said, there is no doubt that the investigators are excellent. The question is about the interpretation of their data.

THYROID CANCER

X-ray Therapy: When I was an intern in the late 1940s, it was conventional to give children

(Continued on Next Page)



x-ray treatment to shrink the thymus gland, to protect them against sudden unexplained death, or to protect them from upper respiratory infections. Radiotherapy was used also for enlarged adenoids and tonsils, and fluoroscopy was used to examine the baby from head to foot once a month to prove to the mother how healthy he was. All of these procedures continued until the early 1950s. The consequences are being observed now, as you know so well from television and news reports, if not from the medical literature.

Patients are being observed who were treated for enlargement of the tonsils and adenoids or thymic enlargement. Of 100 patients examined in Chicago, 26 were found to have abnormalities. Surgery was recommended in 18, 15 of whom were operated on. Seven had carcinoma, and 5 of them had metastases or a locally spreading tumor.

At least 7 per cent of persons in this sample, a voluntary sample, who came for examination, had late unexpected effects of a therapy that was used empirically. Physicians thought it might work, so they tried it.

Radioisotopes: In 1954 a nuclear weapon was tested at Bikini. The fallout went far beyond expectation and exposed some Marshall Islanders and a Japanese fishing boat with 25 fishermen on it. The effects were observed especially among the Marshallese children over the next 20 years. Nineteen under 10 years of age had been exposed.

Two who were under one year of age (small children with correspondingly small thyroid glands) had their thyroid glands wiped out by the radioactive iodine. These children were dwarfs. Because their thyroids were ablated, they were not at risk of tumors of the thyroid. Among the remaining 17, 15 developed thyroid nodules. Three of the tumors were malignant. One boy at 19 also developed acute myelogenous leukemia.

There were four children in utero, and, surprisingly, one of them developed a thyroid nodule during the next 20 years. More than 1,000 rad to the thyroid was involved in some of these cases.

BONE CANCER

Thorotrast, a radioactive dye used by radiologists to visualize the liver and spleen, was in vogue about 20 years ago and is now known to have caused dozens of cases of cancer of the liver and leukemia. We happened upon a patient at the National Institutes of Health who was in England when he was two years old and received this dye to visualize his cerebral blood vessels in a search for the cause of his epilespy. He died of bone sarcoma 22 years later. At autopsy a vertebra was removed and was cut in two. Inside the 24-year-old vertebra one could see the baby vertebra as it was at 2 but now sclerosed from bombardment constantly by alpha particles.

On radioautographs alpha particles could be seen zipping out in various directions from the innermost bone of his spine. Here, then, was a medical substance that had unanticipated late effects.

In another instance an important finding was made by a technician helping Doctor Charles Mays in Utah. He had assigned her to the library to look up some references. Her knowledge of the German language enabled her to read an abstract in German about thousands of people, including 220 children given intravenous radium 224 as a possible therapy not known to be curative, for tuberculosis of bone. This unusual treatment was first used in 1944. By 1971, 36 of the children had developed bone cancer; 30 of them had osteosarcoma. Twenty others developed benign bone tumors; more may still occur.

SUSCEPTIBILITY TO CANCER

It is important to know not only what causes disease or cancer, but who gets it the most or who gets it the least. By understanding the mechanisms involved one may be able to draw some conclusions about the effects of doses too low to be evaluated. There have been some dramatic developments in this regard as relates to radiation in recent years Patients with a disease called xeroderma pigmentosum (XP) have a genetically determined immense sensitivity to sunlight, and they develop skin cancer very easily. By studying skin fibroblasts in culture from these patients, exposing those cells to ultraviolet light, Doctor J. E. Cleaver discovered in 1968 that the DNA damage produced by ultraviolet light could not be properly healed. There was a DNA repair defect. This rare genetic disease was later found to be a combination of six rarer diseases, each with its own enzyme defect that prevents proper DNA repair.

The six sub-types were identified when the cells from a family with one type of xeroderma were found to heal the cells from another family with a different type of XP.

There is another genetic disease first reported by a French physician, Madame D. Louis-Bar, in 1941. Patients with this disease, when they get to mid-childhood, have eyes that look bloodshot, and they stagger because of a brain disorder. They have a very high risk of cancer of the lymph glands — 100 times greater than normal. The disease is called ataxiatelangiectasia; I will call it AT. In 1967, when one of these patients developed lymphoma and was treated with ordinary doses of X-ray therapy that should cause no difficulty, he developed acute radiation sickness. The case was reported, just because it happened. And the next year, a second case. Then silence; nothing until 1974, when in Birmingham, England such a patient was seen at a hospital that had laboratory facilities to study the fibroblasts from the skin in culture. The fibroblasts had decreased survival in proportion to the radiation dose.

This observation led to the discovery that gamma radiation harms DNA, and it cannot be repaired properly. So it is a gamma radiation analogue of xeroderma pigmentosum in which there is improper repair of UV damage.

The Japanese have discovered by studying XP cells in culture and adding some enzymes derived from bacteria infected with phage, that they can cure these cells in culture. They may thus be able to develop a biological product which, if it is safe for people, could be given to patients with this disease as replacement therapy.

I would like to review very briefly some other evidence that shows how we get from gross observations to molecular biology or to fundamental biology and to a better understanding of the causes of disease.

There is a variety of medical disorders that predispose to leukemia. Down's syndrome is due to misdivision of a chromosome before conception of a child. In Down's syndrome there is an excess of leukemia which must also be determined to some extent before conception.

Children with Bloom's syndrome are dwarfs. They have a genetic disease that makes them sensitive to the sun, and they die more often than usual of leukemia. Leukemia is also frequent in Fanconi's syndrome, which is a genetic disease. In both Bloom's and Fanconi's syndromes the chromosomes are very fragile in culture.

In chronic myelogenous leukemia (CML) 85 per cent of patients had what was thought to be a missing piece of the long arm of chromosome 21, the chromosome that is triple in Down's syndrome. With new chromosome-staining techniques that separate the chromosomes from one another, by banding them so they are easily identified it was found that the chromosome defect in CML did not involve chromosome 21, but 22. It was not a deletion, but a translocation of a piece of 22 chromosome 9.

Now what this means is that from rarities of occurrence, mistakes of nature, a generalization may be derived: that myelogenous leukemia often involves chromosomal abnormality, either inborn as in those diseases I have just described, or acquired, as by exposure to radiation, or benzene, or possibly some drugs.

It is, as I have said, important to know who gets cancer the most, because it leads to an understanding of factors in common. In this instance the factor in common is chromosomal injury, chromosomal damage, or as previously mentioned DNA damage. With this kind of information in mind one may be able to understand whether very low doses of radiation, perhaps even one photon, can cause cancer or other diseases in man.

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III. Environmental Implications Of Nuclear Power Production

We are Entering Era Of Nuclear Energy With Eyes Open, But Also With Some Trepidation.

By Bernard T. Feld, Ph.D.

You have heard this morning about one possible environmental impact of nuclear energy programs, the various types of effects of low levels of radiation on populations. I will not dwell any further on that particular aspect of the problem.

There are, of course, many problems arising out of widespread dissemination of nuclear power and nuclear power technology. The problem of the effects on the population of the radiations which normally escape from nuclear reactors is one which is certainly amenable to reactor design and which, in the present state of reactor technology, does not seem to be a very serious one. As Doctor Bond has pointed out, a well-designed reactor will release radiations, both in its vicinity and at greater distances, whose effects can be far less than those of the radiations to which people are normally exposed through natural causes, such as background radiation which arises from the radioactive matter in rocks (mostly uranium and its decay products), including radium, the cosmic radiation which comes from outside the earth, and the normal, or perhaps not-so normal irradiations, x-rays, diagnostic and therapeutic radiations of various kinds, to which medical science subjects the population as a matter of choice.

Read at the symposium on Biological and Medical Implications of Nuclear Power, Brown University, March 9, 1977

BERNARD T. FELD, PH.D., *Professor of Physics, Massachusetts Institute of Technology; member, Manhattan Project; charter member, PUGWASH Group; co-worker with Leo Szilard on the Council for a Liveable World; and Editor of the Bulletin of the Atomic Sciences.*

EFFECTS OF NUCLEAR REACTORS

There is, however, a variety of other effects of nuclear reactors, which have not yet been considered and which I should like to discuss, although I shall have to do so rather briefly and in broad strokes, because I shall cover a great deal of ground.

When a nuclear reactor is in operation there accumulate within the reactor huge quantities of radioactive fission products, which have to be contained within the reactor during its operation, and then disposed of, once the fuel elements are removed from the reactor. The major problems with nuclear reactors are associated with the safe containment of these huge quantities of radioactove materials and their safe disposal once they are removed from

the reactors. It is these problems which, I believe, present the greatest challenge to nuclear power technology.

Beyond this, of course, there is the problem that, associated with nuclear reactors, there are the materials of which nuclear bombs are made, for example, uranium 235, the light isotope of natural uranium, which is frequently enriched, sometimes to a degree where it is capable of being used for nuclear weapons. Uranium 235 occurs in normal uranium in about 1 part in 140, a concentration below that which is necessary in order to make an atomic bomb. It must be concentrated to at least 20 per cent enrichment, (generally closer to 50 per cent or more), before it is usable in atomic weapons. The enrichment of uranium is a very laborious, energy-consuming, and expensive process, not easily attainable by nations which are not relatively technologically advanced, and certainly not easily obtainable by small groups within nations that might wish to produce atomic weapons in a clandestine fashion. However, the technology is rapidly advancing, and one can conceive in the future other situations where enriched uranium might become available even to sub-national groups.

Much greater danger, with respect to the production of nuclear weapons, arises from the fact that one of the by-products of all reactors containing uranium is a new element, a man-made element known as plutonium, which is produced from the more abundant isotope of uranium, the heavier isotope which does not undergo fission. The plutonium can then be used either in new reactors to produce more energy, or fabricated into nuclear weapons.

Plutonium, being an element which is different chemically from uranium, can be separated rather readily from the spent fuel elements, although the presence of huge amounts of radioactivity makes this a cumbersome and uncomfortable process. Once separated, the plutonium can then either be reused in reactors or used for nuclear weapons.

DANGERS FROM NUCLEAR WAR

Now, of course, the greatest dangers arising from the processes associated with nuclear reactors would arise if a nuclear war should occur. By far the most awful insult which could occur to our environment as a result of nuclear fission would be the insult which would result from a nuclear war. This is not, however, a direct problem of nuclear energy. It is, of course, one of the by-product problems associated with peaceful energy in an indirect way. I shall come back to this problem at the end, but I wish to say at the beginning that a full-scale nuclear war would be a horror that is difficult to image.

You have heard something about some of the effects of the two nuclear weapons that were used at the end of World War II in 1945 on Japanese cities. There are now accumulated in the arsenals of the United States and the Soviet Union somewhere between fifty and one hundred thousand weapons, most of them with strengths in the range of the weapons which destroyed Hiroshima and Nagaski. A large fraction of them, some 20,000 or so are about 50 times greater in strength -- that is, instead of fifteen or twenty thousand tons of TNT equivalent, in the range of one million tons of TNT equivalent. A full-scale nuclear war between the United States and the Soviet Union would certainly mean the destruction of the United States and the Soviet Union, and extreme danger to the rest of the world. I shall not dwell on these problems, because they are not within the scope of the questions which we are discussing today. I just wished to remind you, however, that the greatest danger from nuclear energy is by no means nuclear reactor technology and whatever problems it may present, but the danger of a nuclear war.

TYPES OF RADIOACTIVITY

However, as I pointed out, nuclear reactors contain large amounts of radioactivity, and I want to consider the problems which arise from this. Table 1 shows some of the products of reactors with which we need to be concerned, as far as radioactivity is concerned. First, there are the fission products, of which there is a huge variety. I have noted just three of them, which are well known, and some of their properties. There is strontium 90, which is produced in 5 per cent of all the fissions. It has a mean life of 28 years, and emits mostly beta radiation. There is a cesium isotope with a 30 year mean life, which people worry about, and also a longlived iodine isotope. These emit both beta and gamma radiations. And there is, of course, a great variety of others, with a great variety of mean lives, so that fission products

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extend, in mean lives, from a few seconds up to thousands of years.

Now, in addition, the new transuranic elements are produced, the so-called actinides. These are mostly alpha particle emitters. Plutonium 239 is the main actinide product of reactors. In normal reactors, we get approximately one plutonium nucleus for every 2 fissions. In addition, there are heavier isotopes of plutonium, of which the plutonium 240 isotope is the one which is most abundantly produced. The amount of its production depends on the length of the stay of the plutonium in the reactor, because it arises from neutron absorption by the lighter plutonium isotope. In normal reactors, its abundance is anywhere from 5 to 20 per cent of the plutonium produced.

Then there are still higher atomic number elements, americium, and so on, produced in much lower abundance, which are mostly alpha particle emitters, which are dangerous if they get into the body, into the bone, into the lungs, and so on.

In addition, there are the lighter elements which are produced by neutron activation. For instance, neutron absorption in air produces carbon 14; and tritium, the heavier hydrogen isotope, is produced by neutron absorption in water. If the neutrons reach other elements, they can produce other isotopes, eg in sodium or chlorine, and so on. Depending upon what the reactor coolant is, how these elements are exposed to the neutrons, and how they are released into the biosphere, they present various types of dangers. In atmospheric nuclear explosions the neutrons which are released into the air produce fairly large amounts of tritium and carbon 14; and, if the neutrons are in water, they produce some of the other isotopes listed, so that one has additional problems.

Table 2 gives a rapid summary of some of the problems and some of the numbers associated with nuclear reactor technology, and it is worthwhile to just bear these in mind. The fission of one kilogram of a fissionable isotope, either uranium or plutonium, will produce two and a half million watt years of energy -- that is, a two and a half million watt reactor running for one year. Or, if it is exploded, the resulting nuclear explosion would produce something like 20,000 tons of TNT equivalent. This was roughly the amount of uranium or plutonium which underwent fission in the two so-called crude nuclear weapons in Nagasaki and Hiroshima. It takes, roughly speaking, ten times as much, about ten kilograms, to have a critical mass for a nuclear weapon; but in the crude weapons which were used in Japan, which were only about 10 per cent efficient, there was only about one kilogram of fission energy released.

TABLE 1

Some Important Radioactive Products of Reactors and A-Bombs

	$t_{\frac{1}{2}}$	Decay Products	Fission Yield
Fission Products			
$_{38}Sr^{90}$	28y	.54 MeV β^-	5%
$_{53}I^{129}$	1.72×10^7y	.15 MeV β^- .04 MeV γ	1%
$_{55}Cs^{137}$	30y	.52 MeV β^- .66 MeV γ	7%
Actinides			
$_{94}Pu^{239}$	2.44×10^4y	5.15 MeV α .05 MeV γ (30%)	$\sim \frac{1}{2}$
$_{94}Pu^{240}$	6.58×10^3y	5.16 MeV α .05 MeV γ (25%)	$\sim$ 5-20%
$_{95}Am^{241}$	460y	5.48 MeV α .04 MeV γ (15%)	$\lesssim$ 1%
Neutron Activation Products			
$_{1}H^{3}$	12.26y	18 keV β^-	
$_{6}C^{14}$	5770y	156 keV β^-	
$_{11}Na^{24}$	15 hr	1.39 MeV β^- (2.75, 1.37 MeV γ's)	
$_{17}Cl^{36}$	3×10^5y	0.7 MeV β^-	

TABLE 2

Some Relevant Numbers on Reactors and Fission Explosions

1 kg U^{235} or Pu^{239} fission $\rightarrow$ 2.5 Mwatt-years energy
$\rightarrow$ 20 ktons TNT equiv.

1 Mw-y (Megawatt-year) = 10^{24} fissions
= 400 gm U^{235} or Pu^{239} burnup
$\longrightarrow$ 400 gms fission products
$\longrightarrow$ 400 x R gms Pu ($R \approx \frac{1}{2}$-1)

Units

3.7×10^{10} disint/sec = 1 Curie (Ci)
(disintegration rate of 1 gm of Ra)

1 radiation unit (rad) = 10^9 particles/cm^2
$\approx$ 1 rem of γ's

1 Ci-hr at 1 meter $\longrightarrow$ 1 rad

Radiation from a Fission Explosion

$d\dot{\Phi}/dt = 6.7\times10^{13}/t_{sec}^{1.2}$ (Ci/kg Pu)

$\dot{\Phi}(t_1 \rightarrow t_2) = 0.94\times10^{11}\ (t_1^{-0.2} - t_2^{-0.2})_{sec}$ Ci-hrs/kg Pu

PRODUCTS OF FISSION

One can turn the computation around. One megawatt year -- that is, a reactor running at the level of one million watts for one year -- produces 10 to the 24th fissions. This corresponds to a burn up of about 400 grams of fissionable elements and yields 400 grams of fission products.

In addition, such a reactor produces plutonium in the amount of 400 times a quantity R (which is essentially the amount of plutonium produced for one uranium burned up). R is equal to about one half in normal reactors, but in breeder reactors it can be even greater than one. Hence, one produces somewhere between 200 and 400 grams of plutonium for every megawatt year of reactor operation.

I should point out that a normal reactor, the kind of reactors which are now being constructed, operates at about 1,000 megawatts. Hence, a normal reactor -- by "normal," I mean the kind which are now being built to produce nuclear power — would produce of the order of half a ton of fission products per year, burn up about half a ton of uranium 235 or plutonium, and produce between a quarter and half a ton of plutonium per year.

CURRENT PROGRAMS

The programs that are currently being discussed contemplate the construction in the USA of a few hundred 1,000 megawatt reactors by the year 2000. Thus, something like 20 years from today, it is contemplated that, in the United States alone, we shall be producing a few hundred tons of plutonium per year, a few hundred tons of fission products per year, and burning up a few hundred tons of uranium or plutonium per year. Therefore, circulating around the country in various stages of processing and reprocessing will be these quantities (hundreds of tons).

Let us now consider the radiation from reactors. I would remind you regarding Table 2 of the curie and the radiation unit. One radiation unit is about 10 to the 9th particles passing through a centimeter per second. One curie at one meter will produce one radiation unit in one hour. So a useful unit of radiation dose is curie-hours. At a distance of one meter, one curie hour produces about one radiation unit in a person.

Now, an explosion of one kilogram of plutonium produces initially a radioactivity of about 7 times 10 to the 13th curies. But this falls off with time as one over T to the 1.2 power. The total flux of radiation in curie-hours per kilogram of plutonium explosion is given by the expression in Table 2. The solid curves in Figure 1 show how this radiation rate falls off with time. These curves give you an idea of the magnitude of radiation associated with, let us say, an atomic bomb of the Nagasaki variety. After about half an hour the rate is still in the order of 10 billion curies, but it falls off very rapidly. Of course, this radiation is spread over large areas. But, nevertheless, its effects can be very great.

Table 3 indicates a few more such relations, related to nuclear reactors.

Now, a nuclear reactor which has been running for some time -- let us say, T -- and is then shut down, a one megawatt reactor, produces a rate of radiation of 4 times 10 to the 6th curies, which then falls off in time rather slowly.

At long times, which are large compared to the time which the reactor has been running, the radioactivity falls off more or less at the same rate from a sudden explosion, and the net radioactivity is of the same order of magnitude. That is, a megawatt year of reactor produces roughly the same amount of long-term radioactivity as the explosion of one kilogram of plutonium.

(Continued on Next Page)

TABLE 3

Radioactivity in Reactor Fission Products

time t (after shutdown) short compared to running time T, $t \ll T$

$$\frac{d\phi}{dt} = \frac{4\times10^{6}}{t_{sec}^{0.1}} \quad \frac{Ci}{Mw}$$

$t \gg T$

$$\frac{d\phi}{dt} \cong \frac{2.5\times10^{13}}{t_{sec}^{1.2}} \quad \frac{Ci}{Mw\text{-}yr} \quad \left[\frac{6.7\times10^{13}}{t_{sec}^{1.2}} \quad \frac{Ci}{kgPu}\right]$$

Total Radioactive Flux from Reactor Fission Products

$$\phi \cong 1.4\times10^{9} T_{yr}^{0.3} \quad \frac{Ci\text{-}hr}{Mw} \quad \left[\approx 10^{11} \quad \frac{Ci\text{-}hr}{kgPu}\right]$$

TOTAL AMOUNTS OF RADIATION

The total flux of radiation, integrated over time, is given by the last expression in Table 3. Rather than dwell on expressions, let us see how these look when we plot them.

Figure 2 is a log-plot of the rate of radiation against the time after shutdown, with the time given in hours. The solid curve is for a 20 kiloton explosion, which falls off, as one can see, quite rapidly with time. However, for a reactor, the falloff is initially rather slower. The curve depends on how long the reactor has been running. The lower curve is for a thousand megawatt reactor that has been running for one year. To give an idea of the effect, it should be pointed out that after something like a week after shutdown the reactor still has on the order of one hundred million curies of radioactivity.

This indicates the magnitude of the problem if there should be an accident and this radioactivity should be released. The curves in Figure 2 are for a thousand megawatt reactor; this is the kind of reactor that will be running in the United States, of which we expect to have a few hundred sometime near the year 2000. In Figure 2, the right-hand scale shows the long-term effects. A one-month operating reactor has something like 30 times as much radioactivity as the explosion of one kilogram of plutonium. A one-year operation raises that to something like 300 times.

Figure 3 indicates the integrated effect, that is, the integrated amount of radioacticity resulting from the fluxes shown in the previous figure if one shuts down the reactor and then integrates the total flux in curie years from shutdown to some time t, again measured in hours.

One sees that from an explosion most of the radiation occurs well before one hour and very little more accumulates after one hour. For reactors which have been running either for one month or for one year, the radiation continues and the integrated flux keeps growing, so that, after one day, it is still a factor of 20 or more below the total amount that eventually accumulates. Even after ten years it has not quite reached the saturation level, either for a one-month operating 1,000 megawatt reactor or for a one-year operating reactor.

The total accumulation is in the order of 10 to the 7 to 10 to the 8 curie-hours. Remember that one curie-hour at one meter produces one radiation unit. So that 500 curies at one meter would produce a lethal dose in one hour.

And here we are dealing with amounts which are of the order of 100 million curie hours.

To give some notion of extent of fallout possible, Figure 4 represents an attempt to indicate what would happen if there were a reactor accident in which the material were distributed,let us say, over some populated area.

As abscissa, I have plotted the integrated flux in curie-hours from some reactor, and the ordinate is the area in square kilometers over which this integrated flux would have to be spread in order to provide a lethal dose, that is, 500 rads to an individual somewhere in the middle of that area. Thus, if we had, let us say, 10 to the 11th curie-hours of radiation and this was spread over an area of 1,000 square kilometers or less, anyone within that area would receive 500 rads or more.

LETHAL AREA

This curve shows, in essence, the area over which a given flux of radiation is lethal. I have indicated on the curve the lethal areas corresponding to an explosion of one kilogram of plutonium or, essentially, 20 kilotons; also indicated is the point corresponding to an explosion of 20 kilotons; also indicated is the point corresponding to an explosion of one megaton, or 50 kilograms of plutonium.

Thus, we see that a one megaton explosion would provide enough radioactivity to cover an area of something like 50,000 square kilometers. A normal city might comprise some 200 square kilometers, over which its population is spread.

Points are also indicated for the normal 1,000 megawatt reactor, either operating for one month or for one year. Thus, for a 1,000 megawatt reactor operating for one month, if all the radioactivity were then spread out uniformly, it would lethally cover some 2,000 square kilometers. If the reactor had been operating for one year then, if that were spread out over an area of 15,000 square kilometers, everybody within that area would receive 500 R. Of course, if it were spread over a larger area, the radiation dose would be correspondingly lower; but this indicates the kind of problem with which one would be faced

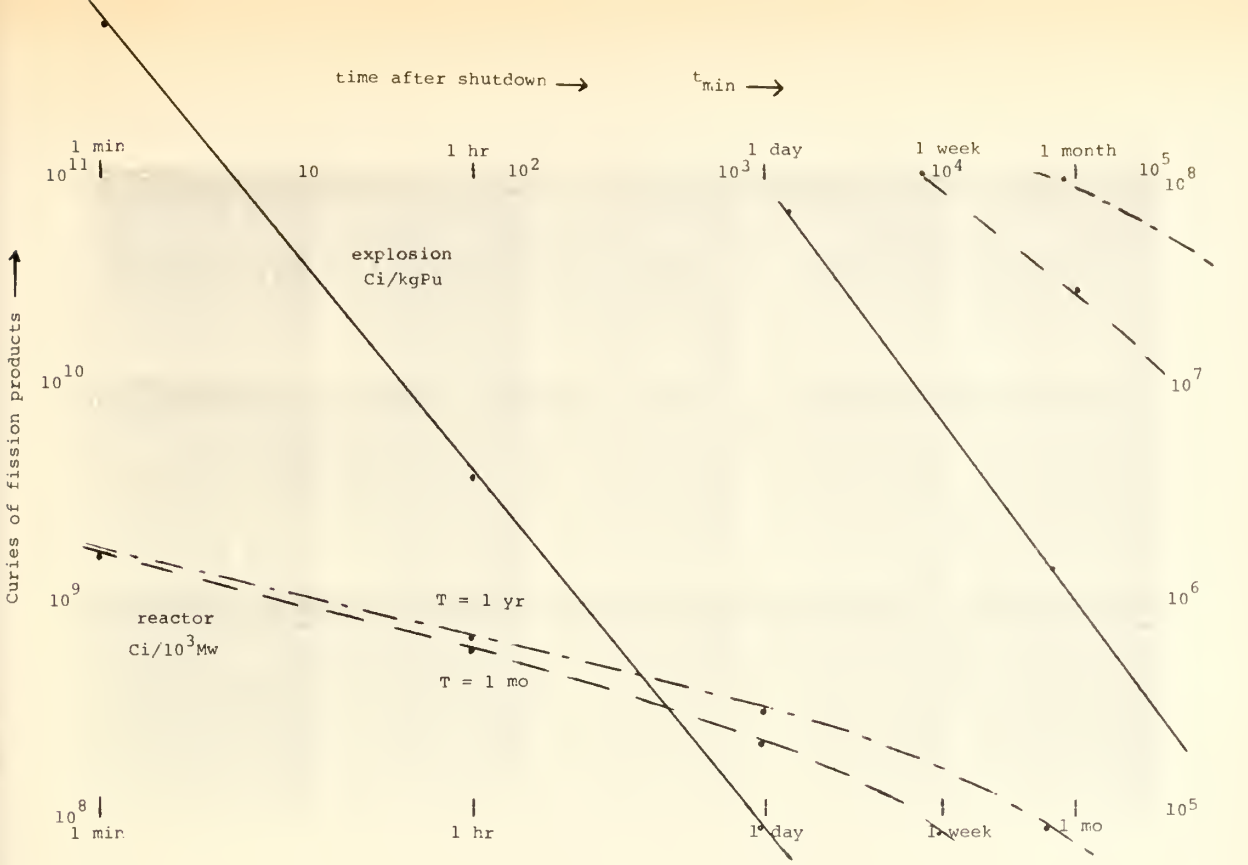


Figure 1

Total $\left\{\begin{matrix}\text{radioactivity} \\ \text{fission product}\end{matrix}\right\}$ decay rate after shutdown

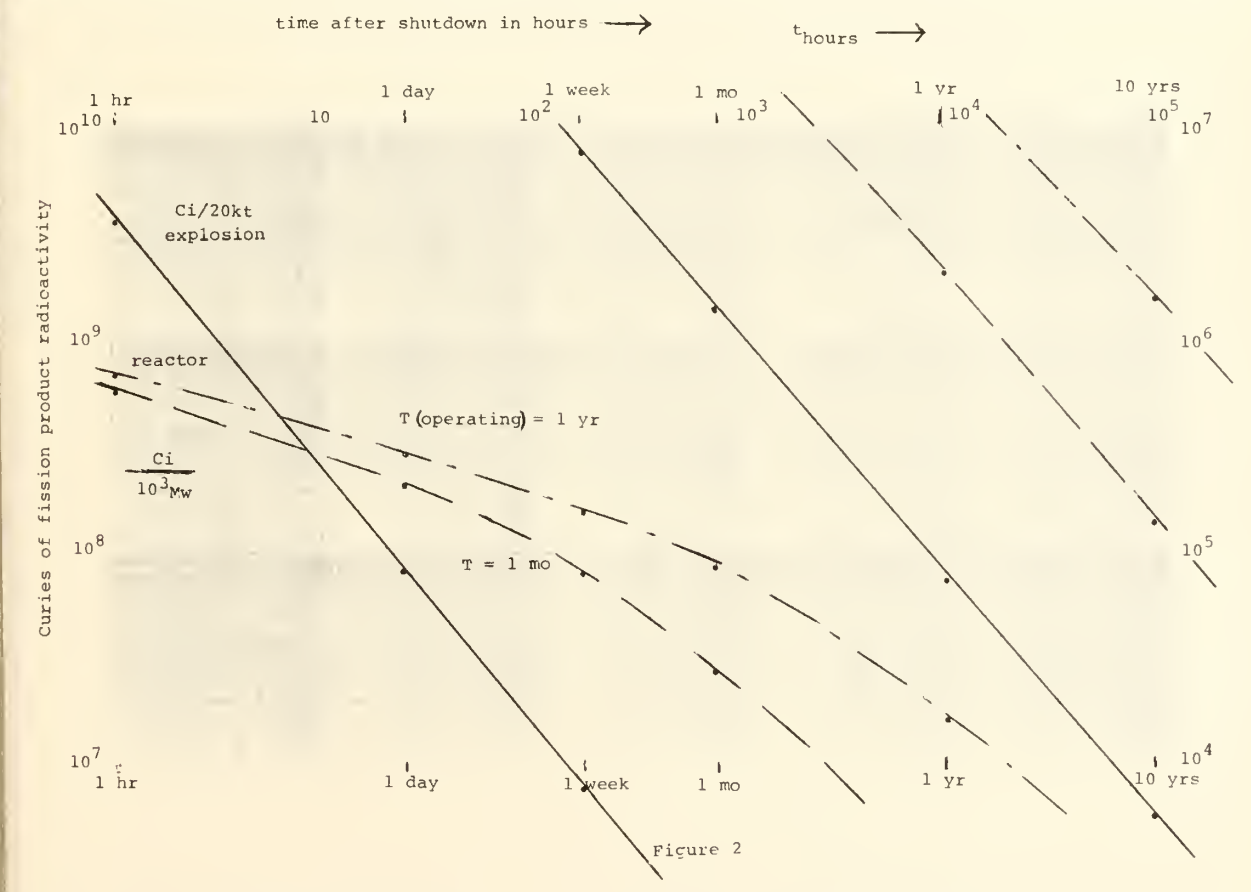


Figure 2

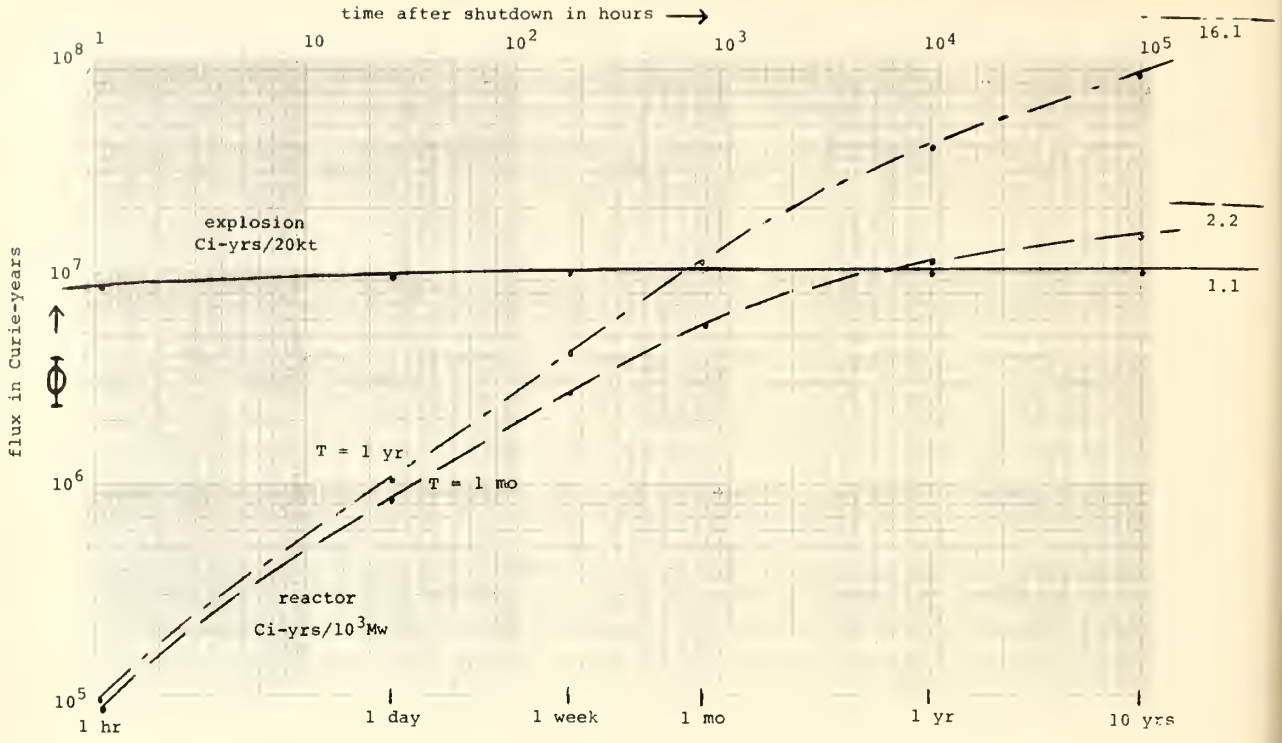


Figure 3

Accumulated Flux After Shutdown

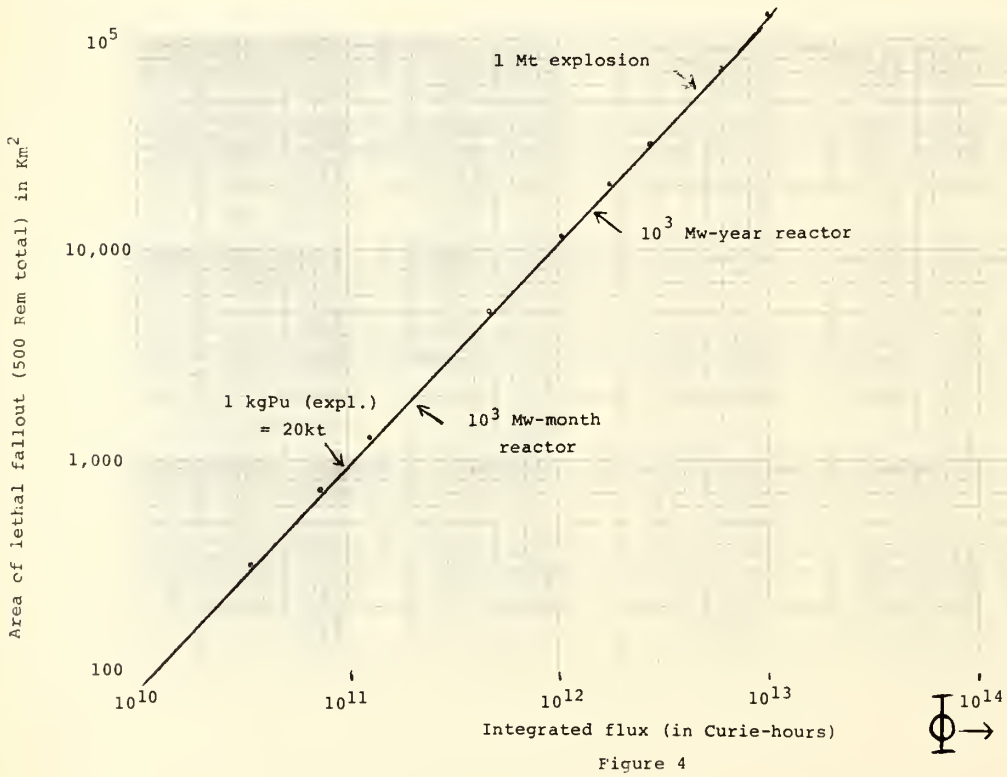


Figure 4

in the case of a nuclear accident in which the radioactivity were to be spread over a populated area. The results could be lethal to literally hundreds of thousands of people, if that radiation happened to spread over a large city.

So the problem is really one of reducing the probability of such accidents, which I will turn to later.

REACTOR ACCIDENT PROBABILITY

At this point it would be appropriate to devote a few words to the reactor accident problem. Determination by calculation of the probability of a reactor accident is extremely difficult and a very vexing problem. There was a very long study by a group headed by one of my MIT colleagues, Professor Norman Carl Rasmussen, which a couple of years ago issued a report, the famous Rasmussen Report, which tried to assess the probability of the kind of accident which would lead to a release of the radioactivity in the reactor and, therefore, could lead to a large number of fatalities.

The Rasmussen Report has been subject to a great deal of controversy, and I don't wish to go into the controversy to any extent at this time. Suffice it to say that most people would agree that, given the assumptions put into the Rasmussen Report, the computer program gave results which can be relied upon. The problem is whether one accepts the assumptions or not.

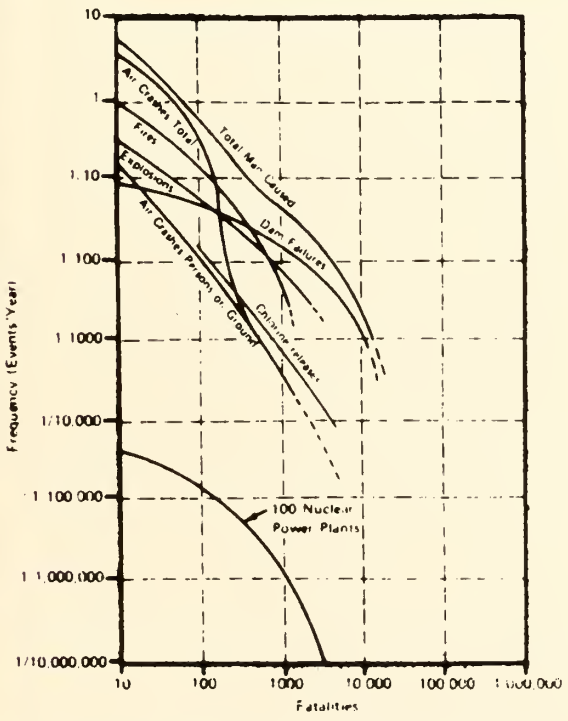
Among other things, the assumptions attempted to calculate by various methods what sort of series of accidents could occur in a reactor which would lead to the release of its radioactivity. Things which were left out of his calculations, which omissions have been criticized, were the possibility of deliberate sabotage, that is, a deliberate attempt to release the radioactivity by sabotage, or what would happen in the case of a nuclear war, if, let us say, a nuclear weapon or even ordinary explosives were dropped on a nuclear reactor. These kinds of things are very difficult to calculate.

In general, the Rasmussen Report could not, and did not even try to take into account

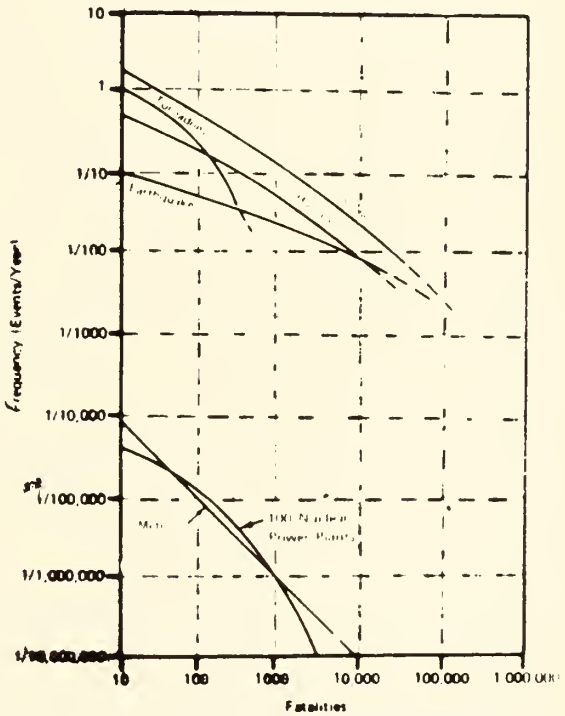
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FIGURE 5

Nuclear reactor accidents and natural catastrophes



Frequency of fatalities due to man-caused events



Frequency of fatalities due to natural events

human frailties, in the sense of carelessness, or, as I pointed out, deliberate human acts. These kinds of things are very difficult to take into account. It took into account, primarily, only physical factors.

The results of the Rasmussen Report are described in Figure 5, which is taken directly from the report. These curves represent an attempt to show the number of fatalities against the probability of the accident occurring. A small number of fatalities occurs with larger probability; accidents with a large number of fatalities occur with much smaller probability. Again, these are logarithmic scales.

On the left-hand side of the figure, reactors are compared to the accidents from the kinds of problems that are man made: automobile deaths, airplane deaths, and so on. One can see that the reactor curve normally falls below these by three orders of magnitude or so. The right-hand curves represent naturally occurring accidents: earthquakes, tornados, hurricanes, and other natural disasters. Here again there are about three or four orders of magnitude difference from the reactor curve.

The curve which runs along with the reactors is for fatalities occurring as a result of meteors falling on populated areas.

So, as one can see, on the basis of these calculations reactors are extraordinarily safe.

LONG-TERM EFFECTS ACCIDENT

One of the problems that has been raised about these calculations is indicated in Table 4. The fatalities that have been discussed in the Rasmussen report are those associated only with the prompt effects, the immediate effects of the disaster. There are longer term fatalities such as cancer deaths—these are the lower level radiation effects — genet thyroid tumor cases, and contamination of land, which woul inability to raise crops and similar p.

Table 4 shows the calculations whi subsequently been made, in a study carried out by the American Physical Society, of the degree of fatality in an accident which would have produced, according to Rasmussen, something like 10 short-term fatalities.

Thus, one can raise the number of fatalities by three or four orders of magnitude. It is contended by those who are worried about the possible validity of the Rasmussen Report that, if one counts them all in, the number of fatalities is raised to the same order of magnitude as for other man-made dangers, such as automobiles, coal-burning furnaces, and so on.

Thus, nuclear reactors are perhaps in this sense not quite as safe as Rasmussen would have indicated, but they are not in any event, as indicated by these computations, any large order of magnitude less safe than the kind of risks we normally accept in other things that we do in our lives.

TABLE 4

Long-Term Consequences of Nuclear Reactor Accidents Predicted at Same Level of Likelihood as the Ten Short-Term Fatalities[a]

Cancer deaths	7,000
Genetic defects	4,000
Thyroid tumor cases	60,000
Square miles of land contaminated with radioactivity above acceptable levels	3 000
Massive water contamination: Enough to contaminate Ohio River above maximum permissible drinking standards for more than a year	

PROBLEMS OF VAST ENERGY CONSUMPTION

There are other kinds of problems with which reactors are associated. One of the main problems is that we are contemplating a reactor economy or an energy economy which is going to raise the total amounts of energy used in the United States by two or three orders of magnitude over the next 50 years; that is, we are contemplating something like a 10-year doubling of energy use in the United States to go on for at least the next half century and 10-year doubling in fifty years would raise the total by a factor of 30, and it would continue to multiply.

There are, of course, good reasons why nuclear energy appears to be so attractive. Fossil fuels are going to run out. Oil is going to run out rapidly. There are much larger amounts of coal, but its burning leads to serious environmental problems -- pollution, and also some radioactivity. Incidentally, the amount of radioactivity released from coalburning energy plants is comparable or possibly somewhat greater than the amount of radioactivity released in a well-designed

(Continued on Next Page)

safely operated nuclear reactor in the absence of any accident.

There are very limited amounts of other easy sources, such as hydro-power. Hence, fission energy is important to satisfy our energy needs over the next fifty years or so. However, there are serious difficulties associated with fission energy. Fission products are a serious problem. As I mentioned, the huge amount of plutonium, which not only can be used to make bombs, but is also highly toxic if it gets into the biosphere, represents another problem.

To give an idea of the magnitude of the problem: it is estimated by the International Atomic Energy Agency that by 1980 the less developed countries alone will be producing enough nuclear energy to produce something like 1,000 bombs a year. And this will rise by the year 2000 to a sufficient amount of plutonium to produce something like 30,000 bombs per year. This is in the so-called underdeveloped world. In the developed countries we expect to have an order of magnitude higher production of energy and therefore of plutonium.

And, finally, there is a problem of the thermal limits on energy use. This difficulty is associated not only with nuclear energy, but with all forms of energy except solar. Let me describe the problem:

The main point is that there is a certain amount of radiation falling on the earth from the sun. When one produces energy which releases into the biosphere amounts of heat approaching within one or 2 per cent of this amount, then one can expect major climatological effects, such as melting of the ice caps, which could produce very serious net effects.

We are today within a factor of something like 100 to 200 away from such limits. If we continue to increase our energy consumption at the rate which is contemplated, within the next century we shall be approaching the thermal limit -- that is, we shall be producing energy which will release into the biosphere enough heat so as to rival, within a few per cent, the total amount which is impinging on the earth. This is a limit which we must not exceed, for entirely natural reasons.

DISPOSAL PROBLEMS

So there are natural limits. Nuclear energy is just one part of the problem. Nuclear energy production will exacerbate the energy problems in the sense that it introduces additional radioactivity-related problems into the situation: the problem of the disposal of vast amounts of radioactivity. Beyond the problem of possible accidents, there is this disposal problem, about which I presume it can only be said that there are quite a number of contemplated solutions. There is a great deal of confidence among those working in the field that a solution will be found for the disposal of the tons of highly-radioactive fission products per year which will be produced in nuclear reactors. But, at the present time there is no one solution which has been demonstrated really to work. So that we are going into the field without being absolutely certain that we have a solution, but with a fair amount of confidence that such a solution will be found.

In the end the solution may turn out to consist of putting the radioactive wastes into rockets and shooting them into the sun, where they will be easily burned up; that might not be quite as far-fetched as it sounds at the moment.

But, on the other hand, there are many who feel that rather less drastic solutions will be found to this problem.

RISKS VS. BENEFITS

However I must point out that these problems exist. They have not yet been solved. We are going into this new era of nuclear energy production with our eyes open, but with a certain amount of trepidation about where we are going, with great dangers and grave risks, but, of course, on the other hand possible great benefits. And the choices must be made by us within the next decade because the decisions that are now being taken and will be taken in the next decade will determine where we will go, not only in our lifetimes, but in our children's lifetimes as well.

Department of Physics
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

ACKNOWLEDGEMENT

Grateful acknowledgement is extended to Doctor Colin Orton, Department of Radiation Oncology, Rhode Island Hospital, for his willing assistance in preparing the above papers for publication.

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Biological And Medical Implications Of Nuclear Power: Discussion Of Papers

Question: Knowing what radium deposit in bone does, what do we know about plutonium in bone among plutonium workers?

Doctor Miller: I don't think we know very much. At Argonne National Laboratory there is a group studying the watch dial painters who pointed the brushes in the 1920s and '30s, and who have a very high frequency of osteosarcoma and, of all things, of the endothelial lining of their mastoid cells. The Argonne group have been thinking about studying plutonium workers. Perhaps Doctor Bond wants to say something on this question.

Doctor Bond: There are quite a few things that could be said. I shall merely say that there are a number of studies that have been conducted for a long period of time on the toxicity of plutonium. In the early days, during World War II, there was a group in the Navy who were working with plutonium. During the war the health physics procedures were not very good. They did inhale plutonium, and they do have body burdens that are well in excess of the so-called permissable limit. These individuals, there are about 27 of them, have been followed now for about 27-28 years. To this point there have been no indications in these individuals of diseases associated with the plutonium exposure.

In addition, there is a plutonium registry involving workers who had been exposed in various laboratories to various amounts of plutonium, and those studies are under way. To date there are no positive findings to report in this group either.

So that we have to rely on animal studies for potential effects at low doses and dose rates. Even in animals, at the low doses commensurate with the maximum permissible doses, no effects have been seen and the estimates of effect are derived from extrapolation.

Question: Doctor Bond, you said that radiation showed some effects on the DNA. Could you give us more detail on how gamma radiation affects the cells?

Doctor Bond: That is a fairly tall order. We know that radiation affects DNA, as Doctor Miller indicated. We are quite confident that it is via damage to DNA that one does get chromosomal abnormalities, genetic effects, and, very likely, the late effects, such as cancer.

The intermediary processes are not that well understood. The deposition of radiation energy is a purely physical process. There is then a series of physical/chemical processes, with the production of so-called free radicals, that in turn lead to the lesion in the biological molecule.

From then on it is believed that cell death is associated with chromosome and DNA damage, but that tie has not been definitely established. It is fairly clear that for most end points of significance DNA is the target molecule; but for many it is not established completely.

Doctor Miller: Doctor Feld mentioned the number of cancers that are estimated to result from a nuclear reactor explosion, but could you tell us how many cancers come from sunlight per year in the US? I can. It is 12,000 cancer deaths and many more other cancers of the skin. So there is nothing that is without risk, as people have said before.

Doctor Feld: I just wanted to indicate that the figures given in the Rasmussen Report are limited only to the immediate deaths, and there would be additional deaths. I did not want to indicate that that might not be an acceptable risk, because we take these risks all the time.

Part of the symposium on Biological and Medical Implications of Nuclear Power, Brown University, March 9, 1977

As noted, most of the curves for the things we do every day including driving in automobiles, and particularly riding in airplanes, are relatively low-risk processes. These risks are orders of magnitude above the immediate casualties from nuclear reactor accidents.

The only point that I wanted to make is that there are additional casualties which, I think, raise the risk of nuclear reactors to the level of other risks we take, but it doesn't put it above the level of the other risks that we normally take. But the picture is not quite as sanguine as Rasmussen painted. On the other hand, it is not beyond the kind of risks that we are normally willing to take in things which we regard as being necessary, or at least congenial to our lives.

Doctor Glicksman: In one of your slides, Doctor Bond, you compared production of fossil fuels to nuclear reactor type of operation. Does this change the implications of the calculations? There was a factor of 10 difference in your bottom line.

Doctor Bond: My discussion was limited entirely to the routine operation situation. That was deliberate because Doctor Feld was to discuss other aspects of nuclear power.

Doctor Feld has brought up some quite important considerations. It would take a substantial amount of discussion to understand all of the ramifications that are involved here, and there are very important considerations.

I should like to comment on this. The Rasmussen Report was done for the simple reason that there had been no accidents to date in commercial power plants. The normal approach to calculating the probability of accidents involves a library of events that allows one to predict probability. Since there was no accumulation of events, there had been zero accidents. That approach was denied to him.

The alternative approach which Rasmussen used was to build up from component parts. Doctor Feld has described this quite accurately.

I should simply like to say that the extremely catastrophic type of accident which was described is extremely remote. In this very low probability area, one comes out with similar probabilities or higher probabilities with respect to many situations that potentially one might encounter in life. The most interesting thing to me about the Rasmussen Report was that, if one uses the same criteria with respect to a reactor accident which could be applied to airplane accidents, dams breaking, meteors, or anything else, one comes out with the same order of risk for the same size accident.

So I agree with Doctor Feld completely that, if one is dealing with these extremely remote probabilities and indeed they are extremely remote, then one has the same order of magnitude risk with whatever type of approach to energy or other life hazards that we have. Nuclear reactors are no different in this regard.

Question: I should like to clarify one thing about the Rasmussen Report. He issued a draft report which went out for comment and review by the American Physical Society, the Association of Concerned Scientists, and universities all over the country. He received comments in reply which are absolutely correct in emphasizing the alternative effects and causes of cancer.

Doctor Feld: I just wanted to say that Rasmussen is aware of these, and they are included in the final report. I referred to those curves because they have been disseminated widely in the media. I just wanted to point out that they do neglect a few effects.

But, nevertheless, I would go along with the main conclusion of Rasmussen which is that the risks associated, under the circumstances that he described, are essentially no greater than many other risks which are generally accepted in our lives.

Question: Doctor Miller stated that there were 12,000 skin cancer deaths in the United States. How would you compare that as a risk with the fact that there are an estimated 1,200 cases of bronchogenic carcinoma among 6,000 uranium miners? Now, bronchogenic carcinoma carries a very high mortality risk as compared to skin cancer, and it is a very high percentage who get the disease. This part of the nuclear fuel cycle is not indicated in the table Doctor Bond showed. How can you ignore that data?

Doctor Bond: In the slide, I did show the different stages in the fuel cycle. I did show the mining operations. In the risk there was included precisely what you are saying; that is, part of the risk has been known for many, many years, first discovered in the mines in central Europe centuries ago. Of course, the

biggest killer in that regard in the United States is from coal mining. And that is regrettable and indeed tragic, but it is a reality. All of those were factored into the slide that I showed, using exactly the same approach to statistics and the relative risks. Essentially nothing comes without danger. There is no free lunch. One has to compare relative dangers and not look at one in isolation.

Doctor Miller: I wanted to ask Doctor Feld, what should I worry about in priority order: recombinant DNA; the immense number of new chemicals that are introduced, PCBs, PPBs, kepone, and so on; overpopulation; the risk of nuclear reactor explosions; or the price of coffee?

Doctor Feld: Well, I don't know that I am the one to answer that question. But, I would suppose that, if you are worried about your own survival, the last thing to worry about is the price of coffee. It is probably a good thing if it goes up. On the other hand, if one is worried about the survival of mankind, then I would guess that you would probably worry about the proliferation of nuclear weapons and the nuclear weapons technology, then the possible effects of kepones, and the various chemicals being introduced into the biosphere. I don't know at this stage where to put the new results of genetic research, recombinant DNA, because that may work both ways.

There are different degrees of worry. You worry about yourself, and you worry about your children, and so on. I don't know how you set your priorities. I would say that you had better worry about all of them.

Question: Doctor Feld, you said that a nuclear reactor plant, if attacked by a warhead, could explode and destroy a very large area. So, in fact, if you have a reactor near a large metropolitan area and if a country were to drop a bomb, even a small bomb, you may have an atomic bomb sitting right next to a metropolitan area. Is that correct?

The second point I would like to question is: you said that small countries cannot produce nuclear weapons because they do not have the technology or they do not have the economic feasibility. I read a report stating that to produce one nuclear weapon for a poor country requires $50 million, that it requires a power plant to produce it, the reprocessing plant, special technology, the 100 scientists to work on it, and so on. Is not the danger that a small country having such a bomb, perhaps being in very dire straits, may use such a bomb, as nuclear blackmail, thus setting off a chain reaction of nuclear destruction? Every country today has a retaliation plan which says something like this: "We will hit you back if you attack us, because we have missiles that will be able to withstand nuclear attack in nuclear missile silos."

Now, if Russia or the US were attacked by a nuclear bomb, they would counter attack immediately. They would attack the persons they thought were attacking them. So, if the West were attacked by a small country, it might send a nuclear warhead to Russia. Russia might send its nuclear warhead to us. We might send a nuclear warhead to China. China might send it to India, and that would be the end of the world.

Doctor Feld: First of all, I don't think I said or didn't intend to say either of the two things which you ascribe to me. First, with respect to the effect of the nuclear weapon falling on a nuclear power plant. This would not lead to a nuclear explosion. Nuclear reactors cannot explode in the sense of a nuclear bomb —— that is, the energy released over a very short period is not possible from a nuclear reactor. What could happen, however, is that the containment of the nuclear reactor which is very carefully constructed of concrete and steel tanks would be ruptured. This would be the case if either a large amount of high explosive or a nuclear weapon were dropped on a nuclear reactor. This would result in the release of the radioactivity in that reactor, or at least an appreciable fraction thereof, and the spreading of that radioactivity in the vicinity. In that sense the presence of the nuclear reactor close to a large population center does present a danger, most especially in time of war, in that there is some possibility that the nuclear reactor itself might be the target of the other side.

On the other hand, of course, if we are talking about a war between the United States and the Soviet Union, then there is very little point to the Soviet Union exploding a weapon on a nuclear reactor in order to spread radioactivity over the population center; it would obviously have other means. In any case,

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the answer to the question "Is there danger to a city by having a reactor near it?" is that in the case of a war it might be possible that explosive weapons would be used on that reactor. On the other hand, there are a lot of other dangers in the case of a war.

Now, with respect to your second question. This is sometimes referred to in the literature as catalytic war, that is, a small country with a nuclear weapon starting by some device a nuclear exchange which would lead up to a full scale exchange between the so-called major nuclear powers, the United States and the Soviet Union, in the first instance, and the United Kingdom, France, and China, and perhaps India, at a much lower level. That is, of course, always a possibility. But it seems to me the likelihood of that is relatively small, in the sense that the leaders of the United States and the Soviet Union being aware of that possibility, have taken steps at least to avert that particular problem. There is the so-called Hot Line between the United States and the Soviet Union and other means of communication. Whether or not these lines of communication will work, I don't know, but it strikes me that the scenario that you paint is an extremely unlikely one.

On the other hand, I would not underestimate the possibility of a small nation that wishes to obtain a nuclear weapon being able to obtain one, one or a very small number. You are quite correct. Provided the technology is there (and many countries do not yet have it), the investment of some fifty or one hundred million dollars in reactor technology and in the training of the appropriate scientists and technologists would enable a country to produce a nuclear weapon. The primary requisite for this, in addition to the technology, is the material.

The statement that I made about the unlikelihood of small countries referred only to the enrichment of uranium 235 as a means of attaining nuclear weapons. At the very beginning, I talked about uranium 235 enrichment. It seems to me that that is the most unlikely path. The most likely path is through the development of reactor technology and, as I pointed out in the later slide, that is coming naturally. In 20 years the undeveloped parts of the world will already be producing enough plutonium to fabricate something like 30,000 bombs a year. So that danger will exist. The problem, in my view, is the spread of plutonium technology. If we were going to talk about solutions to that problem — and I was not talking about that, because we were talking about medical problems — then we would need all kinds of discussion about how you contain the spread of plutonium and plutonium technology; but that is another set of problems.

Doctor Glicksman: Ladies and Gentlemen, we seem to have run out of time. The discussion has covered a wide range of concerns from our well-being and comfort, our health, and to our very survival. Decisions on the role of nuclear energy in power production will have to be made shortly, if solutions to our energy needs are to be reasonably set for the long run. As one speaker has already said, there is no such thing as a free lunch. And as all of them have indicated, every human endeavor carries with it some risk. Our task is to identify the risk components and to develop the technology for risk containment; and in the process we may well be able to live with it in safety and comfort.



TYPICALLY BRITISH

"Certain activities, such as coitus, produce very large increases in pressure. Sleep always lowers pressure, particularly if the subject sleeps at home. The highest pressure usually is about the twice the lowest," Sir George Pickering, Regius professor of medicine at Oxford, notes,citing recordings from one of his residents. "At midnight he made love to his wife and the pressure rose from 85/60 before to 160/100 during coitus, subsequently falling to 60/30 when he fell asleep."

When these data were reviewed at Oxford, Sir George recounts, a lady professor from Greece commented: "That's just like a Britisher. He immediately turns over and goes to sleep."

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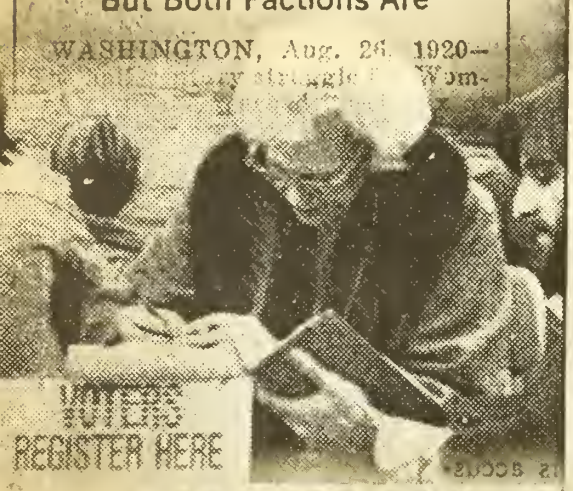
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NEW WORLD HOPE

President Hails 'Great Instrument of Peace,' Insists It Be Used

HISTORIC LANDMARK

Meeting Gives Standing Ovation as Executive Pictures Peace Gain

"If we fail to use it," he declared to the solemn final meeting of the delegates, 'we shall betray all of those who have died in order that we might meet here in freedom and safety to create it.'

"If we seek to use it selfishly—for the advantage of any one nation or any small group of nations—we shall be equally guilty of that betrayal."

Fervent Interpolation

The President, speaking in the auditorium of the War Memorial Opera House, built in memory of sons of the Golden Gate city who gave their lives in the first World War, in which he himself served, seemed to give unconscious expression to the solemn feeling of the occasion when, at the outset of his speech, he interpolated the words, half a hope, half a prayer:

"Oh, what a great day this can be in history!"

Just before the plenary session

PATIENT PACKAGE INSERTS: A CONCEPT WHOSE TIME HAS COME?

The consumer's right to know is an irreversible and desirable trend of the Seventies. It extends, and properly, to a patient's right to know more about his or her prescription medications. One way, gaining favor, is through patient package inserts. Wisely-prepared and properly distributed when medically indicated, they could markedly improve patient knowledge and drug therapy—laudable goals by anyone's standards.

The PMA endorses these goals and will work with government, the health professions and consumers to achieve them.

The Advantages

The concept holds promise of benefits: better patient understanding of the product prescribed, better adherence to the treatment plan, and more awareness of possible side reactions.

Every doctor has had patients who fail to finish antibiotic regimens because they feel better. Some patients assume that if one tranquilizer or analgesic is good, two may be twice as good. Still others fail to report dizziness while on antihypertensive therapy —and so on.

Problems like these might arise less often if the patient received written information in addition to verbal instructions. Some studies suggest that patients are more receptive to such materials, and they more often understand the verbal instructions and follow them, when inserts are used.

The Disadvantages

There are also some potential problems. Obviously, the inserts must be clearly phrased, without extraneous or complex detail. How much information is enough? How can it be kept current? Should all patients receive the same information? Should inserts be included with all drugs? Should only potential problems be listed or are patients better off with a "fair balance" presentation that describes usefulness as well as drawbacks?

These and similar questions require answers, since model inserts have yet to be properly developed and tested. Despite the need for these studies, the FDA is proceeding prematurely with inserts on selected products. We think the Congress is the only place where the matter can be given the proper legal status and direction, particularly since it represents a conceptual change in the legal, medical and social framework of the nation's prescription drug information system.

The Solution

The PMA believes that carefully-devised pilot studies of various kinds of inserts are needed. They should be developed and implemented with full participation by doctors, pharmacists, consumers, communications experts and the drug industry. Such studies will provide reliable pathways to follow, so that inserts will be useful aids to medical practice.

And particularly we think that you should be closely involved in this debate and in these studies and decisions. Otherwise, people with less experience and qualifications may control the purposes, content and use of a tool with considerable promise for improved patient care. It could make a difference in your practice tomorrow, and more importantly, in the health of your patients.

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Editorials

TIM NORBECK AND JIM CLARKIN

Four and a half years ago, following the retirement of John E. Farrell as the first and only Executive Secretary of the Rhode Island Medical Society, Timothy B. Norbeck came to Rhode Island to fill a large void. His title was elevated to Executive Director, but he was in fact only the second in a thin line of succession. He had received his training in medical society administration as a member of the AMA staff.

While John Farrell's act was a difficult one to follow, Tim made his presence felt in many and substantial ways. He has modernized the administration and strengthened the staff of the Society, and has expanded greatly its scope of operations and interests. Its financial stability has been greatly improved, and the positions of the library and the RHODE ISLAND MEDICAL JOURNAL, both venerable activities and sources of pride to our members, have been consolidated.

Tim has been unfailingly kind and considerate and has gotten along well with everyone. We shall indeed by sorry to see him and his fine family leave these parts, but we shall welcome him as a neighbor in nearby Connecticut, where he will assume responsibility as Executive Director of the state's medical society. We wish him well.

His successor will be James R. Clarkin, who has been Tim's Assistant Executive Director for the past two years. Jim came to us after a long experience in medically related administration, first in a Blue Cross plan and then in a medical practice group.

We have come to respect Jim for his good judgment and sensible approach to sensitive matters, for his demonstrated ability to get along, and for his always courteous and cooperative response to all requests. We look forward to continued growth and a strengthening of our Society under his leadership, and extend to him our congratulations.

PHOTO OFFSET

This is the first issue of the **Rhode Island Medical Journal** to be printed by the photo offset method. With the recent acquisition by the Wm. R. Brown Co. Printers of a varityper 3510 phototypesetting machine, offset has become available to us on a cost effective basis. The transition will enable us to reproduce graphic materials more easily and economically; to print mathematical materials with the full range of symbols and notations not always available to us before; and to offer prospective advertisers more attractive composition and layout of ads.

We do not anticipate at the present time any major changes in the overall design of the **Journal** along with the new printing method. However, certain minor changes will no doubt be apparent in the next few months such as the typeface used in the headings of this issue. This is a temporary phase. Final determinations of new typefaces, which will differ from the ones used now, will be made before the end of the year.

We confidently expect that photo offset will facilitate technical production of our magazine and thereby be conducive to neatness, accuracy, and appeal of presentation. Please bear with us during this transition.

IS NUCLEAR POWER SAFE?

In the dialogue between nuclear proponents and nuclear opponents the basic questions remain unresolved.

1. Does the US really need nuclear energy? Although the US has only 6 percent of the world's population, in 1976 it accounted for 31 per cent of the world's energy consumption. Nuclear opponents use this statistic as an argument that the US wastes outlandishly and does not need as much energy as it uses. Nuclear proponents, who believe the US does need energy, point out that US energy consumption can be cut down only to a limited degree, since it is largely determined by the country's high rate of production, accounting for 25 per cent of the Gross World Product.

2. What is the impact of nuclear energy on the environment? Nuclear opponents point to two major threats to the environment by nuclear plants: emissions of low-level radiation, which may increase the incidence of cancer; thermal discharge in water used in cooling the condensers of nuclear plants, which may be a threat to marine life. Nuclear proponents argue that the amounts of radioactive emissions from nuclear plants are safely below recommendations of the International Commission for Radiological Protection; and that thermal discharge is being regulated by individual states and the US Environmental Protection Agency. Proponents foresee many beneficial uses of thermal discharges as in heating greenhouses, providing frost protection for crops, heating homes and buildings, and accelerating growth of certain types of fish and shellfish.

3. How safe are nuclear plants and reactors? Opponents point to near accidents including the partial meltdown of the Enrico Fermi fast breeder test reactor near Detroit in 1966 and the fire at TVA'sBrowns Ferry Nuclear Plant in Alabama in 1975. Proponents point out that in these and other instances safeguards did prevail, and that on a worldwide basis nuclear plants have accumulated 1,300 reactor years of operating experience without any accident which released radiation in harmful amounts.

4. How reliable and cost competitive are nuclear plants in comparison with plants fueled by coal or oil? Nuclear opponents argue that nuclear plants are excessively prone to breakdowns and that their reliability is incommensurate with the rapidly escalating costs for building the plants. Proponents, on the other hand, say that much of the escalation of cost is related to the initial impact of regulatory requirements and cite studies showing that, on the average, nuclear produced electricity costs less than that from coal or oil plants.

5. What can be done to guard against the proliferation of nuclear weapons capability? Nuclear opponents are in accord with President Carter's indefinite deferral of US commercial reprocessing and recycling of plutonium and his halt to the country's major breeder reactor development project. Nuclear proponents are not as fearful of the risks of civilian misuse of plutonium as they are of limiting the influence of the United States on proliferation elsewhere. The latter support the President's objectives, but are worried that the methods being employed will hinder, not help, us achieve those objectives.

6. Can disposal of high-level waste be accomplished safely? Opponents point to the danger to generations to come of radioactive wastes. Nuclear proponents are optimistic that our record of successfully safeguarding wastes will be sustained.

These are some of the questions. The answers are not easy.

This issue of the **Journal** is devoted to a symposium on the safety of the nuclear reactor for the generation of power, conducted at Brown University during the past spring. It should be of especial interest to Rhode Islanders because of developing plans to construct a nuclear power reactor at Charlestown, Rhode Island. The thrust of the papers is to the effect that there is nothing to fear.

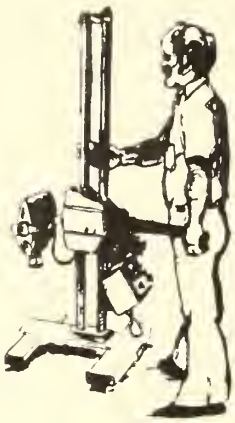
REFERENCE

"Reassessing nuclear energy," **The General Electric Investor** 8(2):4-15, Summer 77

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Editor's Mailbox

DOCTOR RONCHESE

To the Editor:

I look forward to my copy of the **Rhode Island Medical Journal** each month and enjoy reading it column-up and column-down. The July 1977 issue gave me — and my sister — particular pleasure for Doctor Francesco Ronchese was a very special person. He was not only a Friend of the Library (and of the Librarian) but a family friend as well.

To Doctor Ronchese a patient was a person, not just a clinical problem. My sister, with her multitude of "you name it" allergies, was a School of Design student with a special interest in medical art. He encouraged her in this field by having her assist him with his clinical photography at the Rhode Island Hospital Outpatient Department. Her job was to tint the photographs, and to do this she had to see the patients. She also designed a book plate for him. In Memoriam mentions his interest in art. My sister and I remembered the time he made a professional house-call and stayed to talk about the reproductions we had framed and hung -- the artist and the subject, Degas and absinthe!

His who-what-why-where-and-when curiosity was contagious. His request for information about a slang expression, a Yankee saying, or an unfamiliar word would inspire you to search memory, dictionary, and any other source that might give the answer.

"Avid reader" is correct -- and on any subject. One day he asked me if I knew anything about a book, **Adventures in the Skin Trade.** I told him he was welcome to borrow my copy, but that Dylan Thomas wasn't referring to dermatology. He read it. He was always the first patron to borrow new Davenport Collection acquisitions, regardless of subject.

Doctor Ronchese was a Baker Street Irregular and gave his Sherlock Holmesiana material to the Library. Doctor Davenport had a large collection of Conan Doyle, including the first two volumes of Holmes's cases, and this gift of books, letters, clippings, and scrapbook was most welcome.

Someday I hope -- on one of my archivist junkets to Providence -- to make a complete catalogue of his gifts. They are all well housed and marked but scattered with some books in the general collection and some in the Davenport Collection.

In the meantime, thank you and the Editorial Board for paying tribute to a wonderful friend.

Helen DeJong (Mrs. David C.)
Tallahassee, Florida



THE LAETRILE GANG

To the Editor:

The recent editorial on Laetrile in the **Rhode Island Medical Journal**(September, 1977) was a masterful piece of work and you are to be commended for it. The more light shed on the sleezy characters behind Laetrile (and the big gains they derive from it) the better the suffering patient will be served (and not milked).

Thank you for a job well done.

Arvin S. Glicksman, MD

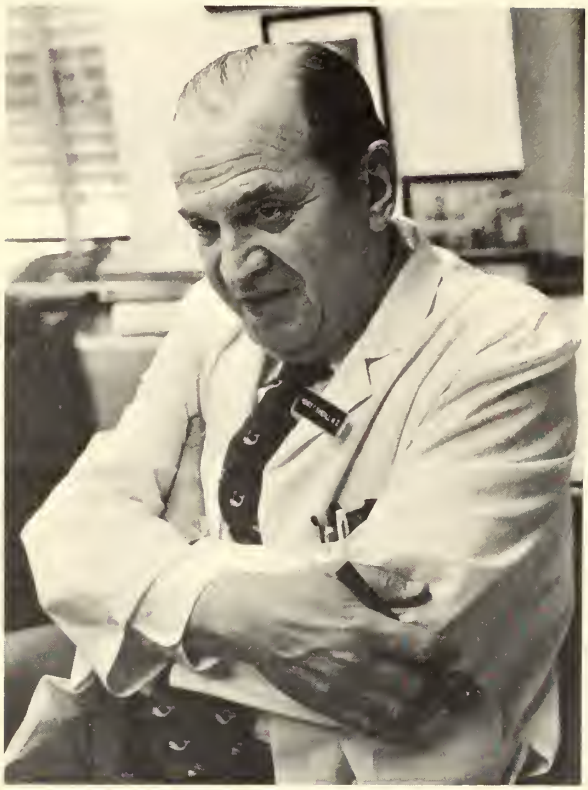


TWO SENTENCE ESSAY

Formerly, when religion was strong and science weak, men mistook magic for medicine. Now when science is strong and religion is weak, men mistake medicine for magic.

Prof. Thomas Szasz of
Syracuse University

Peripatics



A Rhode Island surgeon, HENRY THOMAS RANDALL, MD, FACS is the 21st recipient of the Distinguished Service Award of the American College of Surgeons. Doctor Randall, who was selected from 35,000 members to receive this highest award of the college, is Surgeon-in-Chief at Rhode Island Hospital and also Professor of Medical Science and Chairman of the Section on Surgery in the Brown University Program in Medicine. The award was bestowed in recognition of Doctor Randall's many services to the college and to American surgery for a quarter century; and for his important achievements in research, especially in human metabolism, surgery physiology and in improved care for cancer patients. For his development of elemental diets for surgical patients Dr. Randall is known internationally.

* * *

Member of editorial board, PAUL CALABRESI, MD, has been appointed Vice President for Medical Affairs at Roger Williams General Hospital. Dr. Calabresi will serve in an advisory capacity on all medical policy and operational matters of the five major clinical departments and ancillary services.

* * *

HORACE MARTIN, MD, is a co-author of three recently published books on the fundamentals of integrated gas chromatography.

* * *

GEORGE W. ANDERSON, MD, AND DANIEL MASSOUDA, MD, received awards as outstanding teachers at the last annual resident graduation dinner of the Women & Infants Hospital. Also at that dinner the Aaron Joseph Oster Award for teaching excellence was presented to CHARLES P. FOOTE, MD.

* * *

SALVATORE R. ALLEGRA, MD, presented two papers at the Sixth European Congress of Pathology in London, England, September 13th and 14th.

* * *

Emma P. Bradley Hospital community mental health department director, HUGO TAUSSIG, MD, has been appointed to the Governor's Task Force to Study the Entire Field of Services to Rhode Island Children and Adolescents.

* * *

Local attendants at the recent annual meeting of the American College of Gastroenterology in New Orleans were RAYMOND E. MOFFITT, MD, and CHARLES F. JONES, MD. Doctor Moffitt was re-elected as governor of the college from New England.

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DERMAQUIZ

Conducted by BENCEL L. SCHIFF, M.D. and
ARTHUR B. KERN, M.D.

Founded by FRANCESCO RONCHESE, M.D.



Left: An asymptomatic skin-colored tumor of the nose of three weeks duration in a 65 year old male. Note the raised rolled border and centrally depressed keratotic center.



Right: An asymptomatic skin-colored tumor of the dorsum of the hand of one years duration in a 65 year old male. Note the raised rolled border and ulcerated center.



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Book Reviews

BASIC & CLINICAL IMMUNOLOGY by H. Hugh Fudenberg, M.D., Daniel P. Stites, M.D., Joseph L. Caldwell, M.D., and J. Vivian Wells, M.D. Los Altos, California, Lange Medical Publications, 1976.

This book is a generally well-written, exhaustive, and timely review of an important and complex subject. Unfortunately, however, in its present form the book is of almost no use to any but the most superficial and desultory reader. The reason for this lack of usefulness is the fact that virtually all specific literature citations have been suppressed or omitted, apparently according to the policy of the editors or publishers. Thus, the book is in the main undocumented.

This volume has the potential to become a useful and important contribution. Rectification of the policy regarding references and bibliography would enable that potential to be fulfilled.

Joel K. Weltman, M.D.

HOW TO FEED YOUR HYPERACTIVE CHILD by Laura J. Stevens, George E. Stevens, & Rosemary B. Stoner. Foreword by Wendell A. Riggs, M.D. Garden City: Doubleday, 1977.

There are many well-defined syndromes which are related to gross disturbances in diet and the inability to utilize food or to dietary deficiences at certain periods of development.

Brain neurotransmitters such as catecholamines (norepinephrine and dopamine), indolamines (serotonin) and acetyl-choline can influence mood and behavior patterns. The central nervous system (CNS) concentration of serotonin is partially controlled by the dietary availability of tryptophan, whose uptake into the brain is affected by the amount of ingested protein. Other essential amino acids such as tyrosine and phenylalanine compete with tryptophan in the CNS carrier system all of which affect the synthesis of catecholamines. According to Cohen, et al, the hyperkinetic syndrome of childhood is caused by dopaminergic disturbances in the mesolimbic area. The most compelling evidence linking hyperkinetic disorder with dopamine pathway disturbances is the improvement in attention and behavior in children treated with dopamine

releasing drugs such as methylphenidate and dextro-amphetamines.

The authors of **How to Feed your Hyperactive Child** have apparently given up on proven methods (ie, judicious use of stimulant medications) and feel that additive free non-salicylate diets are the answer. According to their observations this type of diet has produced marked positive changes in the behavior of their own child who allegedly has a "hyperactive" condition. The authors have collected a plentiful supply of information on this type of diet, as 90 per cent of their book is filled with recipes. If you believe that diet is the therapeutic modality to use with hyperkinetic children who are "hyperactive", then this is the book for you. I suspect that the tremendous amount of time, energy, and support the authors' child received centering around the diet regime played no small part in the positive therapeutic results they noted in their child's behavior. To my knowledge at this time there are no authentic, scientifically controlled, validated studies which show that special diets are of use in hyperactive children.

Peter P. Reilly, M.D.

⚓ ⚓ ⚓

ONE SENTENCE ESSAY

The effective physician is an intuitive statistician.

Shepard, DS, and Zeckhauser, RJ from their chapter in **Costs, Risks, and Benefits of Surgery,** *1977*

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   d.) DEPRESSION
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NEWPORT COUNTY MEDICAL SCHOLARSHIPS



The Newport County Medical Auxiliary has recently presented PATRICK R. WOOD of Newport and MICHAEL D. STOUT of Middletown scholarships for $500 each. Patrick Wood, second left above, is a third year student at Rochester University Medical School. Michael Stout, second right, is a second year student in the Brown University Program in Medicine.

ONE SENTENCE ESSAY

it may be inherent in medicine that the greater effort is spent on areas where least can be done.

Duncan Neuhauser, PhD from his chapter in **Cost, Risks, and Benefits of Surgery,** *(1977)*

ANSWER TO DERMAQUIZ

Left: The lesion of the nose was a keratoacanthoma. This is a benign tumor of unknown etiology. It frequently involutes spontaneously although in some instances it may become quite large and be locally destructive. Characteristic is its very rapid growth and keratotic center. It mimics the squamus cell carcinoma both clinically and histologically.

Right: The lesion on the dorsum of the hand was a squamous cell (epidermoid) carcinoma. This grows more slowly than does the keratoacanthoma but has the serious potential for local and distant metastases.

Differentation between these two tumors is made on the basis of their clinical and histopathologic features.

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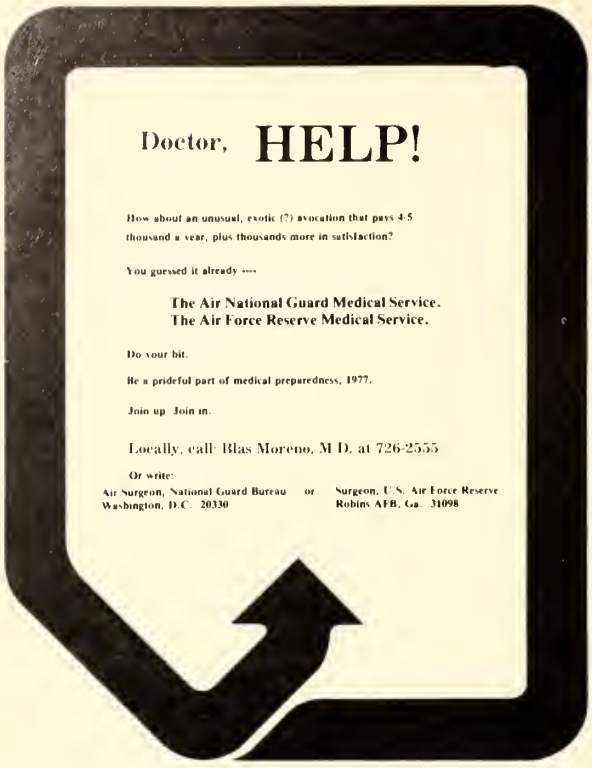
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HOW'S THAT AGAIN? DEPARTMENT

The sweeping reorganization of HEW announced in March by Secretary Joseph Califano appears to be proceeding. Medicaid's Social and Rehabilitation Services has launched a special internal newsletter just to keep up with developments. The inaugural issue of the weekly publication -- Called SRS Reorganization News -- in mid April reported as follows:

"The following support functions will remain with SSA and provide support ot HCFA under Memorandum of: BHA,DI SRS Office of Special Initiatives functions are for AFDC Quality Control ....The responsibility for the Cuban and Indo-Chinese Refugee programs has been assigned to SSA....WIN has been assigned to OHD....HCFA will share responsibilities for project grants with SSA and OHD. Section 222 grants will go to HCFA, which also get the SSA Provider Reimbursement Review Board. The MAC program (maximum allowable cost functions) has been transferred to HCFA....A Memorandum of Agreement between the affected agencies will be developed, including FDA....The SRS financial management functions (except special claims which are discussed under reconsiderations) will be assigned to SSA for OCSE and APA, OHD for PSA and WIN, and HCFA for MSA."

Extracted from the **Blue Shield Washington Report**

ONE SENTENCE ESSAY

Common sense is not so common.

Voltaire

ERRATUM

In "Anorexia Nervosa" (**RIMedJ** 60(9): 419-56 passim, Sep 77) H. Bruch is Hilde Bruch, and "he" should be amended to read "she" on p. 421, col. 1, line 26 and on p. 422, col. 1, line 14.

Rhode Island Medical Journal

November, 1977 Vol. 60, No. 11

Papers on Swine Flu

A character all its own.



Valium (diazepam) is a benzodiazepine with a character all its own. Pharmacologically, it has been described as more potent mg-per-mg than other available anxiolytic benzodiazepines. Pharmacokinetically, only Valium provides active *diazepam* as well as the active metabolites 3-hydroxydiazepam, desmethyldiazepam and oxazepam.

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Another important aspect of the clinical character of Valium is safety. Though drowsiness, ataxia and fatigue are possible, these and more serious side effects are rarely a problem. Of course, as with all CNS-acting drugs, patients taking Valium should be cautioned against driving, operating dangerous machinery or the simultaneous ingestion of alcohol.

Unquestionably, many psychotherapeutic agents, including other benzodiazepines, have antianxiety effects. But one fact remains: you get a certain kind of patient response with Valium. It's a response you want. A response you know. A response you trust as part of your overall management of anxiety and psychic tension.

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Physician in Chief, Children's Hospital Medical Center, Boston, Mass. 1946-1974
"IMMUNODEFICIENCY STATES IN THE MEDICAL AND SURGICAL PATIENT"
Tuesday, January 24, 1978
Dinner* 6:30-7:30 P.M. Seminar 7:30-9:30 P.M. "Fleet Room" Newport Naval Officers' Club

LOUIS WEINSTEIN, M.D.
Professor of Medicine, Harvard Medical School
Physician, Peter Bent Brigham Hospital
"INFECTIOUS DISEASES"
Saturday, February 25, 1978
Seminar 10-12 Noon. Luncheon* 12 Noon-1 P.M. Clarke Cooke House Restaurant, Newport

SHERVERT H. FRAZIER, M.D.
Professor of Psychiatry, Harvard Medical School
Psychiatrist in Chief, McLean Hospital, Belmont, Massachusetts
"THE PROPER USE OF PSYCHIATRIC CONSULTATION AT A COMMUNITY HOSPITAL"
Saturday, March 25, 1978
Seminar 10-12 Noon. AV Room, Newport Hospital

KENNETH H. WILLIAMS, M.D.
Assoc. Professor of Psychiatry and Internal Medicine, U. of Pittsburg School of Medicine
Dir., Alcohol-Drug Abuse Clinic, Western Psychiatric Institute and Clinic, Pittsburg, Pa.
"MANAGEMENT OF THE ALCOHOLIC PATIENT"
Saturday, April 15, 1978
Seminar 10-12 Noon. AV Room, Newport Hospital

HENRY N. WAGNER, M.D.
Professor of Medicine, Radiology and Environmental Health, Johns Hopkins Medical School
Head, Div. of Nuclear Medicine and Radiation Health, Johns Hopkins Medical Institutions
"NUCLEAR MEDICINE IN MEDICAL AND SURGICAL PRACTICE"
Saturday, May 6, 1978
Seminar 10-12 Noon. Luncheon* Noon-1 P.M. Pier Restaurant, Newport

CREDIT

Each of these CME offerings, co-sponsored by Newport Hospital, the Newport County Medical Society and by the Brown University Office of Continuing Medical Education, meets the criteria for two hours of credit in Category 1 for the Physicians Recognition Award of the American Medical Association.

INVITATION

The Newport Hospital and the Newport County Medical Society welcome the participation of colleagues from other hospitals and medical societies. This program joins those already offered elsewhere in our state as a contribution to the continuing medical education opportunities for all physicians.

* There is no registration fee, nor need for reservation at any seminar this year. For those attendees, not members of the Newport County Medical Society, who wish to accept our open invitation for dinner or luncheon before or after the seminars, there is a charge of $7.00 per person and reservation should be made with Mrs. Elizabeth Cranston, Newport Hospital Medical Staff Secretary, 1-401-846-6400, Extension 445 or 446.

Rhode Island Medical Journal

NOVEMBER, 1977 VOLUME 60, No. 11

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DIVISION OF BIOLOGICAL AND MEDICAL SCIENCES
Providence, Rhode Island 02912
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CONTINUING MEDICAL EDUCATION CALENDAR

JANUARY

3 Starting date of the Brown University Annual Review Course in Internal Medicine. Course will be given Tuesday evenings from January 3, 1978, to June 20, 1978, from 7-9 p.m. in the George Auditorium, Rhode Island Hospital. The purpose of the course is to help physicians prepare for the Board examination in Internal Medicine which will be given in September of 1978. For further information, call Mrs. Irene Owens, 863-3330.

10 "THE USE OF PRE-OPERATIVE AND POST-OPERATIVE RADIATION THERAPY IN THE MANAGEMENT OF MALIGNANT DISEASE," Banice Webber, M.D., Professor of Radiation Medicine, Brown University, and Associate Radiotherapist, Department of Radiation Oncology, Rhode Island Hospital. A Newport Hospital Department of Surgery Conference. A-V Conference Room, James Building, Newport Hospital, Newport, 7:30 to 9:30 p.m.

11 SYMPOSIUM ENTITLED: "TOPICS IN HEMATOLOGY." Topics will include "Clinical Spectrum of Hypoprothrombinemia," Maurice M. Albala, M.D., Associate Professor of Medicine, Brown University, and Director, Division of Clinical Hematology, Rhode Island Hospital; "Evaluation of the Patient with Thromboembolism — The Most Common Coagulation Abnormality," Robert I. Handin, M.D., Assistant Professor of Medicine, Harvard Medical School, and Director, Coagulation Laboratory, Peter Bent Brigham Hospital; "Thrombosis and Anticoagulant Therapy," Daniel Deykin, M.D., Professor of Medicine, Boston University and Tufts University, and Chief of Medicine, Boston Veterans Administration Hospital; "Qualitative Platelet Disorders," Angelina C. A. Carvalho, M.D., Assistant Professor of Medicine, Brown University School of Medicine, and Head, Hemostasis Laboratory, Division of Hematologic Research, Memorial Hospital; "Newer Concepts in Hereditary Bleeding Disorders," James P. Crawley, M.D., Assistant Professor of Medicine, Brown University, and Associate, Division of Clinical Hematology, Rhode Island Hospital; "Advances in the Care of Hemophiliacs," Edwin N. Forman, M.D., Associate Professor of Pediatrics, Brown University School of Medicine, and Director, Pediatric Hematology/Oncology, Rhode Island Hospital. George Auditorium, Rhode Island Hospital, 1:00 to 5:30 p.m.

12 "CARDIOLOGY FOR THE CLINICIAN," Course Director, Richard A. Carleton, M.D., Chief, Cardiology Division, Memorial Hospital, Pawtucket, R.I. and Professor, Division of Biological and Medical Sciences, Brown University. Memorial Hospital, Richardson Auditorium. 7:30 p.m. Second Thursday of each month.

12 "CURRENT AND FUTURE TREATMENT IN RHEUMATOID ARTHRITIS," George Ehrlich, M.D., Albert Einstein Medical Center, Temple University, Philadelphia, PA. Saint Joseph's Hospital, Our Lady of Fatima Unit, Stang Classroom, 11:30 a.m. to 12:30 p.m.

20 "SOME GYNECOLOGIC PROBLEMS OF THE ADOLESCENT," Janet W. McArthur, M.D., Harvard Medical School, Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12 noon.

24 "IMMUNODEFICIENCY STATES IN THE MEDICAL AND SURGICAL PATIENT," Charles A. Janeway, M.D., Professor of Pediatrics, Harvard Medical School, and Physician in Chief, Children's Hospital Medical Center, Boston MA. (1946-1974). "Fleet Room," Newport Naval Officers' Club, Newport, RI. Dinner at 6:30-7:30 p.m., Seminar at 7:30-9:30 p.m. Those Wishing to attend who are not members of the Newport County Medical Society are welcome and should call Mrs. Elizabeth Cranston, 1-401-846-6400, Ext. 445 for dinner reservations. There is a charge of $7.00 per person for non-members.

25 45th KENNEY CLINIC DAY. A.M. Session, Medical Papers presented by the Staff; P.M. Session, Papers on Alcoholism. Luncheon. Nurses' Auditorium, Pawtucket Memorial Hospital, 9:30 a.m. to 2:30 p.m.

BROWN UNIVERSITY
DIVISION OF BIOLOGICAL AND MEDICAL SCIENCES
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A Message From The Dean

THE VETERANS ADMINISTRATION HOSPITAL OF PROVIDENCE, RHODE ISLAND

Two newsworthy events occurring during the month of October have served to emphasize the pivotal role which the Veterans Administration exerts in the mainstream of American medicine. First, on October 12, it was announced in Stockholm that three Americans had been awarded the Nobel Prize for medicine; two of these, Doctor Rosalyn Yalow of New York and Doctor Andrew Schally of New Orleans were full-time employees of Veterans Administration Hospitals. (Doctor Yalow was awarded the prize for her discovery of the immensely important radioimmuno-assay technique, while Doctor Schally was cited for his discovery of the hormonal peptides of the hypothalamus).

The second event was the groundbreaking ceremonies, on October 14, for a new Ambulatory Care Pavilion of the Providence Veterans Administration Hospital. Participants in these ceremonies included Governor Garrahy, Mayor Cianci, Bishop Gelineau as well as representatives of our congressional officials, veterans service organizations and the Brown medical school. Mr. Joseph Travers, Director of the Providence Veterans Administration Hospital, announced that this new hospital facility will also provide emergency treatment areas, diversified clinic facilities and a new clinical laboratory with computerized and automated laboratory instrumentation. (Mr. Travers further indicated that this new clinical laboratory will be designated as a special regional center to provide rapid and diversified diagnostic services to other Veterans Administration medical units in the New England region). The new building will house 33,000 square feet of effective floor space and when completed will extend from the north side of the C wing of the hospital.

The magnitude of medical responsibilities which are borne by the Veterans Administration Hospital may not be fully appreciated in our community. Presently there are about 151,000 veterans living in Rhode Island (and an additional 82,000 veterans in southeastern Massachusetts) all of whom are in the catchment area and are therefore eligible to receive medical care at the Providence facility. It is estimated that 16 per cent of the current Rhode Island population are military veterans and that slightly over one-half of all Rhode Island males older than 20 years are veterans of the armed forces.

The Veterans Hospital in Providence opened its doors for medical service in 1949 and coincident with its 24th anniversary (1973) entered into active affiliation with the medical school at Brown University.

The bond between the Veterans Administration Hospital and Brown has become increasingly strong, enduring and mutually advantageous. Through this affiliation the medical school has been provided with an excellent teaching facility and faculty, while the local Veterans Administration Hospital has grown substantially in diversity of services, in numbers of patients treated, and particularly in the number and quality of its professional staff. Since the medical school affiliation was established in 1974, the number

of inpatients treated has increased from 4,484 to 8,253; and the number of outpatient visits has increased from 87,473 to 112,733. In these last few years, the number of nonphysician positions added to the Veterans Administration Hospital roster has numbered 58.

In terms of medical education at the Veterans Administration Hospital, the most significant recent event has been the assemblage of an excellent faculty recruited from numerous medical schools throughout the United States. Doctor Michael Turner, an international authority in hepatic and gastrointestinal diseases, has accepted the dual position of Chief of the Medical Service at the hospital and Professor of Medicine at Brown. (Doctor Turner formerly was Professor of Medicine at the University of Rochester). Doctor Demmie Mayfield has been appointed as Chief of the Psychiatric Service at the hospital and Professor of Psychiatry at Brown; formerly, he was on the faculty at Duke University.

Doctor Eleanor Griffith has recently assumed her position as Chief of the Laboratory Service; she was formerly on the faculty of Jefferson Medical School in Philadelphia. Doctor H. Harrower, the present Chief of Surgery, will shortly retire from the Veterans Administration Hospital and a search committee is actively seeking a successor. Additional chiefs of service, all of whom hold faculty appointments, include: Doctor Z. Laszewski (Rehabilitative Medicine), Doctor W. McEntee (Neurology), Doctor T. McLister (Radiology), Doctor J. Wincze (Psychology), Doctor B. Claunch (Nuclear Medicine) and Doctor W. Bond (Dentistry).

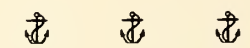
A total of 27 full-time faculty in medicine, psychiatry, pathology, surgery, radiology and rehabilitative medicine are now serving plural functions in behalf of the veteran population of greater Rhode Island and the medical students at Brown.

Until recently medical research has not been a major activity within the Veterans Administration Hospital. However, many of the newer faculty have brought both grant funds and investigative skills to the hospital, and an increasing commitment to biomedical investigation may be anticipated. Federal funds have been used to convert some of the older structures at the facility for the purpose of creating research laboratories for this faculty.

The Veterans Administration Hospital is also associated with many of the Brown-affiliated hospitals. There is joint programming (e.g., shared residency programs in medicine, surgery and surgical subspecialties and pathology) and shared resources between the Veterans Administration Hospital, Roger Williams General Hospital and The Miriam Hospital, representing an increasingly important component of hospital operations in the Providence region.

The Veterans Administration Hospitals of the United States (numbering over 180) can no longer be regarded as domiciliaries for elderly veterans. During the past three decades these hospitals have emerged as centers providing the best of medical care; they have also offered essential clinical classrooms for most of the medical schools of the United States and, in the arena of graduate medical education, have provided close to one-third of all accredited residency training positions in this country. And, as attested by the recent Nobel Prize awards, our Veterans Administration Hospital system has nurtured a productive climate of biomedical research. The Providence Veterans Administration Hospital has paralleled these national trends and with its sister institutions is providing an expanding base for medical teaching and biomedical investigation within the Rhode Island community.

Stanley M. Aronson, M.D.
Dean of Medicine
Brown University



ONE SENTENCE ESSAY

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References
*National Disease & Therapeutic Index, Jan.-Dec., 1976. IMS America Ltd., Ambler, Pa. 1976.
†Amer. Med. Assn., Dept. of Drugs, A.M.A. Drug Evaluations, 2nd Edition, Publishing Sciences Group, Inc., Acton, Mass., 1973, pp. 482-3.

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Results Of The 1976 Rhode Island Fight-Flu Program

A Vaccination Epidemic Associated With No Disease Is Better Than A Disease Epidemic Associated With No Vaccine

By Gerald A. Faich, M.D., M.P.H.
William E. Martin, B.A.

As part of an unprecedented massive national effort to protect the population against the threat of a swine influenza epidemic, the Rhode Island Fight Flu Program (FFP) was developed in July 1976. The goal of the program was to make swine influenza vaccine readily available to all eligible Rhode Islanders and to motivate them to be vaccinated. Since the entire population of the state over the age of 18 was eligible for the vaccine, the FFP was the largest immunization effort undertaken in Rhode Island since the "End Polio Campaign" of 1963. Planning and organization for the program were done from July through October, and actual vaccine distribution began in late October and continued until immunizations were suspended in mid-December.

This paper summarizes the results of the Rhode Island FFP and briefly comments on possible implications of the program. It is hoped that this will aid planning in future programs in the state.

PROGRAM STRUCTURE AND STRATEGY

From its inception[1] the FFP was designed as an endeavor shared by health and community organizations, the private sector of medicine, and the state. This was dictated by the need to develop broad grassroots support and by limited state resources available for the program. The Division of Epidemiology of the Department of Health provided overall planning, coordination, publicity, training, vaccine guidelines, and vaccine distribution channels. Actual vaccine administration was largely done by participating community based groups and individual physicians.

Vaccine indications and specifics greatly complicated initial planning and implementation of the FFP. Two swine

(Continued on Next Page)

GERALD A. FAICH, M.D., *Chief, Division of Epidemiology, Rhode Island Department of Health; Medical Epidemiologist, Center for Disease Control, DHEW, Atlanta, Georgia*

WILLIAM E. MARTIN, B.A., *Coordinator for Immunization, Rhode Island Department of Health; Public Health Advisor, DHEW*

influenza vaccines were made available by the National Influenza Immunization Program:

(1) a bivalent preparation containing A/Swine and A/Victoria influenza antigens intended exclusively for the high-risk group consisting of the elderly and the chronically ill and

(2) a monovalent preparation of A/Swine alone for the general healthy population 18-59 years of age.

From June through November, federal recommendations for vaccine usage by target groups were expanded and changed several times.[2-5] Special recommendations for the use of two vaccine formulations, split and whole virus vaccines, were made. In November healthy children were essentially omitted from elegibility, and booster doses were recommended for all recipients under 24 years of age. In contrast to influenza vaccine recommendations made in previous years, no special priority was given for high exposure groups or critical occupations (such as medical workers, police, teachers,); high-risk referred only to increased chance of disease complications. The final Rhode Island recommendations are summarized in Table 1; however, these did not emerge until November 10-15. Vaccine recommendations were communicated to physicians, program participants, and the general public through a variety of channels including letters to physicians, the Communicable Disease Newsletter, and public news media.

Implementation of the FFP was multiphasic (spread over time) and multifocal (two target populations—high and low risk) to allow for publicity, differing distribution mechanisms, and efficient use of manpower and resources (Table 2). The first step was to distribute vaccine to physicians, so that potential recipients would have the option of using the private sector. Immediately following physician distribution the immunization of high-risk individuals with bivalent vaccine at public clinics, Phase I, was begun. Next came Phase IIA, the immunization with monovalent vaccine of low risk individuals who were members of large private groups such as industries, government employees, hospitals, and colleges. Phase IIB was the immunization at public clinics of the general healthy population 18-59 years of age. Lastly, follow-up to these phases was done in the form of Department of Health public clinics.

During the planning and execution of the program every effort was made to publicize developments and to inform the general public and the professional community. Extensive press, radio, and television coverage were obtained. A telephone hotline was opened, and billboards were used. The publicity campaign was geared toward motivating the population to obtain vaccine by providing public education as to the need and availability of the vaccine. It was stressed that an epidemic was a possibility, not a certainty.

PROGRAM RESULTS

Between October 25 and December 1, 654 physicians were supplied vaccine by the

TABLE 1

R.I. Swine Flu Vaccine Recommendations (a)

Age Group	No Chronic Illness	Chronic Illness (b)
6 to 36 mos.	No vaccine	Two 0.25 ml doses of bivalent (split or subviron by Parke-Davis or Wyeth) separated by a 4 week interval.
3-17	No vaccine	Two 0.5 doses of bivalent split vaccine separated by a 4 week interval.
18-24 years	Two 0.5 ml doses of monovalent (split or whole) separated by a 4 week interval.	Two 0.5 doses of bivalent (split or whole) separated by a 4 week interval.
25-59 years	One 0.5 ml dose of monovalent (split or whole).	One 0.5 ml dose of bivalent (split or whole).
60+years	One 0.5 ml dose of bivalent (split or whole).	One 0.5 dose of bivalent (split or whole).

(a) Bivalent = A/New Jersey (Swine) plus A/Victoria; Monovalent = A/New Jersey (Swine) alone.

(b) (1) Heart disease of any etiology
(2) Chronic bronchopulmonary disease
(3) Chronic renal disease
(4) Diabetes mellitus and other metabolic disorders
(5) Chronic neuromuscular disorders, and
(6) Malignancies and immunodeficient states

Department of Health. No major shortages or distribution difficulties occurred during this physician phase. Private physicians immunized an estimated 94,000 persons during this period (Table 3). A survey conducted in November indicated that the majority of physicians were of the opinion that the FFP was justified and well run.

Public clinics for the high-risk group functioned from November 1 to November 10 sponsored by the FFP Central Advisory Committee.* To place vaccine close to the place of residence of the elderly and chronically ill, a large number of relatively small clinics were conducted. Nursing homes provided and staffed 25 sites; visiting nurse associations conducted 77 clinics; hospitals provided 16 clinics and other groups contributed 29 sites.

From mid-November to mid-December large private group clinics for state employees, industries, colleges, and hospitals were held. These were largely conducted by employers and student health services. Employers participated in order to reduce the absenteeism that would occur in the face of an epidemic and to demonstrate their concern for employee health. It was hoped that the convenience of a vaccination clinic at the work site would result in large employee turnouts. In fact, only 51 per cent of the 100,353 persons covered by 83 phase IIA clinics was reached.

Public clinics for the immunization with monovalent vaccine of healthy individuals 18 to 59 years of age were conducted on four Sundays in November and December. These clinics were sponsored principally by the Department of Health in conjunction with the Jayceettes and the Red Cross. Six to eight large clinics were established in one area of the state on each Sunday. A total of 28 Sunday clinics were held, reaching 112,140 persons. The clinics functioned efficiently and professionally. Long waiting periods were largely avoided because of the speed of the jet injectors used; using two or three jet injectors, some clinics dispensed over 1,000 doses of vaccine per hour.

Public health clinics were operated directly by the Department of Health for a one to three week period in each area of the state following the Sunday clinics to ensure continuing vaccine availability. An average of 700 persons was immunized per day at these follow-up clinics.

During the eight weeks of program execution, 323,662 persons were immunized (Table

(Continued on Next Page)

TABLE 2
Influenza Vaccine Distribution Phases and Target Populations

Distribution Mechanism	Vaccine	Time Table/Phase
		Oct Nov Dec Jan
Private Physicians	Bivalent Monovalent	→
High-risk public clinics*	Bivalent	→ Phase I
Low-risk private (industrial)**	Monovalent	→ Phase IIA
Low-risk public clinics**	Monovalent	→ Phase IIB
Public health clinics	Bivalent Monovalent	→

Target Populations *High risk — 177,000 individuals 59 years of age or chronically ill
**Low risk — 650, 000 healthy individuals 18-59 years of age

TABLE 3
Swine Influenza Vaccine Distribution Phase and Target Group

Phase	No. of Clinics	Persons Immunized		
		Elderly and Chronically Ill	Healthy	Total
Private Physician	—	61,000*	33,000*	94,000*
Phase I (High-risk clinics)				
Phase IIA (Private group clinics)	83	1,070	35,530	36,600
Phase IIB (Sunday clinics)	28	4,690	107,450	112,140
Public health clinics	4	6,132	23,216	29,348
Total	262	124,466	199,196	323,662
Total Target population	—	177,000	470,000	647,000
Per Cent Coverage	—	70.3	40.4	50.0

*Estimated

*Association of Home Health Agencies of R.I., Cranston Community Action Program, Hospital Association of R.I., R.I. Association of Facilities for the Aged, R.I. Department of Community Affairs, R.I. Department of Mental Health, Retardation and Hospitals, R.I. Department of Social Rehabilitative Services, R.I. Division on Aging, R.I. Health Center Association, R.I. Group Health Association, R.I. Lung Association, R.I. Nursing Home Associations.

3). Over 70 per cent of the chronically ill and the over-59-year-old population was reached. Two hundred sixty-two special immunization clinics were held, and over two-thirds of the primary care physicians in the state obtained vaccine. Thus, the program results approached its objective. Rhode Island results compare favorably with those of other New England states. Only about 32 percent of the over-17-year-old population was immunized nationally vs 50 per cent in Rhode Island.

The total cost of the FFP in terms of state expenditures was about $100,000 exclusive of the use of in-place state personnel, equipment, and volunteer expenditures. In addition, $100,000 provided by the federal government in the form of a US Department of HEW special grant was expended. Vaccine was valued at an additional $162,000.

Voluntary support for the program is estimated to have included 13,000 man-hours of time and $11,000 of donated resources such as media time. Some 105 businesses, industrial concerns, schools, health groups, and civic organizations contributed facilities, manpower and other support.

ADVERSE VACCINE REACTIONS

Each person immunized at a public clinic was provided with a phone number for the central flu office to be used for reporting adverse reactions. Physicians were also encouraged to report reactions to the central flu office. For reactions more severe than transient fever and myalgia, an adverse reaction form was completed. A total of 41 adverse reactions was recorded as of March 1. Of these, eight were felt to be due to influenza immunization, 25 were inconclusively related to vaccine, and eight were felt not to be due to immunization.

Reaction reports related to immunization included local (injection site) reactions, neurologic illness other than clinical Guillain-Barre' Syndrome, and a variety of systemic signs and symptoms. No cases of anaphylaxis were reported. The rate of "significant" reported adverse reactions in the state (0.13 per 1,000 vaccinations) was comparable to that found elsewhere; for example, in New York City, the rate of severe reactions requiring further investigation was 0.2 per 1,000 vaccinations.[6]

PROGRAM SUSPENSION — GUILLAIN-BARRE' SYNDROME

During the second week of December, 1976 the occurrence of Guillain-Barre' Syndrome (GBS) was noted in several states in individuals who had received swine influenza vaccine. A preliminary United States Center for Disease Control (CDC) survey of 11 states, including Rhode Island, indicated that the vaccination was apparently associated with an increased risk of Guillain-Barre Syndrome' (GBS). For this reason on December 16 the Secretary of HEW announced that all influenza immunizations should be temporily suspended until the risks could be better quantitated. The Rhode Island Department of Health immediately curtailed vaccine distribution and imposed an influenza vaccination moratorium in response to the announcement.[8]

GBS is an uncommon, though not rare disease. Little is known of its origin, cause, or frequency. About 4,000 cases are estimated to occur annually in the United States. One problem in the epidemiology of GBS is the considerable variation in diagnostic criteria as to what constitutes a case.[9] Typical or classical GBS is characterized by the onset of paresthesias in the lower extremities, usually symmetrical, followed by the gradual development of paralysis over a one-or two-week period.

Characteristically, paralysis is ascending and symmetrical, at times affecting all extremities, muscles of respiration, and facial musculature. Cerebrospinal fluid protein is elevated without an increase in cells in about 50 per cent of cases. Most cases have full resolution of paralysis and all signs and symptoms within several months. Treatment is nonspecific and supportive. In one published review of 1,100 cases of GBS, only one case was associated with influenza vaccine while eight cases were associated with influenza A or B disease.[10]

Five classical cases of vaccine associated GBS occurred in Rhode Island with onsets between November and January. Review of hospital discharge data from 1970 to 1975 revealed that 20 to 31 hospital discharges with primary diagnoses of polyneuritis and polyradiculitis (including GBS) occurred per year during this period.

For the period from October 1 to February 3, 1977, 685 cases of GBS were reported to

CDC from all states. Of these, 314 persons were unvaccinated, 361 were vaccinated and 10 had unknown vaccination status. As of February 3 there had been 13 unvaccinated GBS deaths and 14 vaccinated GBS deaths in this group of cases.[11]

Several correlations imply that the vaccine was causally related to GBS. Vaccine associated cases of GBS had onset of disease from one to nine weeks after immunization with the vast majority having onset two to four weeks after immunization. Had the vaccine not been related to GBS this pattern would not have emerged, since onset would have followed vaccination randomly. In respect to age distribution non-immunized cases tended to be younger than vaccine associated cases (peak 15-30 years vs 35-50 years). The relative risk of developing GBS in the four weeks following immunization was estimated to be 11; ie, 6.6 persons per million vaccinees developed GBS vs 0.58 persons per million nonvaccinees.[11] The increased GBS risk did not appear to be related to vaccine by type or manufacturer.

INFLUENZA SURVEILLANCE

As part of the FFP increased influenza surveillance was conducted. This was done by supplementing the routine sentinel physician reporting system with absenteeism monitoring of 47 schools and industries with 41,483 enrolled members. Because of limited laboratory capacity, it was decided not to emphasize single-case diagnostic serology and virology; rather the laboratory was prepared to collect and analyze specimens from outbreaks of flulike illness.

Surveillance revealed little influenza disease activity in Rhode Island in the 1976-77 period. Case reports showed some low-level isolated activity in November, December, and March that did not exceed that found in the 1971 to 1975 period (Figure 1).

School and industry monitoring did not reveal sharp increases in absenteeism characteristic of influenza except in several elementary schools in March. Investigation in these instances revealed outbreaks of flu-like illness, but laboratory studies confirmed influenza (type B/Hong Kong) in only one instance.

Other laboratory specimens collected during the winter season resulted in three isolates of A/Victoria influenza from adults in March. Serology done at hospital laboratories on individual patients did not confirm (fourfold titer change) any influenza cases.

IMPLICATIONS FOR THE FUTURE

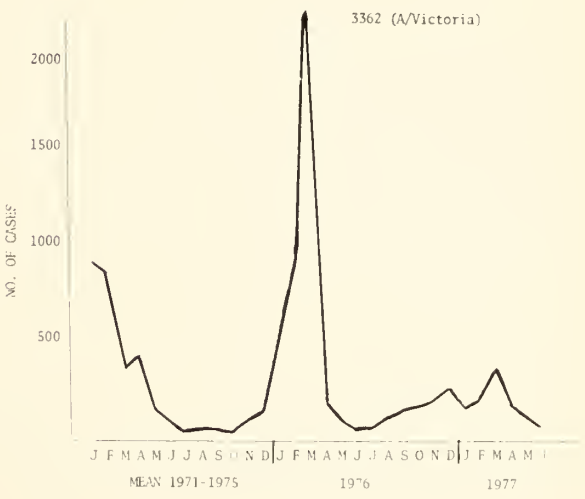
Both the National Influenza Immunization Program and the state effort were plagued by controversy,[12] legal considerations, and credibility gaps. In contrast to polio, influenza is not seen as a major personal threat by most of the general population.[13] Scientific controversy over the magnitude of risk presented by swine influenza and the need for a mass immunization program started in the spring of 1976 and continued throughout the year.[14,15] Liability issues presented major difficulties for vaccine manufacturers and program participants.[16,17] Shifting goals, target groups, and vaccine specifics greatly complicated planning and implementation of the program. Lastly, the unanticipated association between Guillain-Barre'Syndrome and the vaccine resulted in the abrupt suspension of immunization in December.

Suspicion about the influenza immunization program continues not only because of the Guillain-Barre' Syndrome, but also because an epidemic of swine influenza did not occur. It must be remembered that the program was conducted because it was felt that there was a real threat of a swine influenza epidemic at the time the program was conceived. If an

(Continued on Next Page)

FIGURE 1

Influenza Reports, R.I. Sentinel Physicians
Mean 1971-75, 1976, 1977



epidemic had occurred without an immunization program, the damage to the public's health would have been inexcusable.[18,19]

The effect of the 1976 influenza immunization program on future programs is impossible to predict, but some speculation might be in order. Greater caution, more careful feasibility studies, and greater concern for legal issues are likely to be the rule in the future. The program has resulted in a loss of credibility that may inhibit large scale influenza vaccination programs for a number of years. Medicolegal concerns including informed consent, adverse reaction surveillance, and product liability will probably affect other federally sponsored immunization programs such as those for measles and polio. Hopefully more consultation on feasibility issues and available resources will occur between federal, state, and local authorities.

In Rhode Island credibility has probably been less damaged than nationally. It is suspected that most state citizens viewed the program as a national effort and responsibility that was economically and efficiently conducted within the state by the Rhode Island Department of Health. The FFP demonstrated the state's ability to conduct swiftly and smoothly a large scale program that reached out to all segments of society. As importantly, it showed the willingness and ability of health professionals, health organizations, and civic groups to participate in such an effort.

SUMMARY

In the face of a possible epidemic of Swine Influenza, the Rhode Island "Fight Flu Program" was developed in July 1976. From the end of October to mid-December, half of the adult population of the state was immunized using a multifocal and multiphasic strategy. While planning and coordination were done centrally, most of the actual program was efficiently and enthusiastically implemented by volunteer community and health organizations and by private physicians. Severe adverse reactions including the Guillain-Barre' Syndrome were infrequently reported. Little influenza disease activity was found in the state in the winter of 1976-77.

The controversy surrounding the 1976 program and the credibility loss associated with it may inhibit future large-scale programs. Medicolegal concerns, greater caution, and more careful feasibility studies are likely to be the rule in the future.

ACKNOWLEDGEMENTS

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Participation Of Providence Senior Citizens In The Swine Flu Inoculation Program

Senior Citizens Should Be Informed Clearly As To The Effectiveness Of Flu Innoculations

By William R. Aho, Ph.D.

BACKGROUND OF THE STUDY AND METHODOLOGY

A. Background. This report is an outgrowth of a larger study of the preventive health behavior of senior citizens at two Providence, Rhode Island senior centers--St. Martin de Porres and the Fox Point Senior Center. The parent study was designed to get information about the relationships between the self-reported attitudes, health behaviors, and health status of the respondents to determine how they fit with the Health Belief Model of Preventive Health Behavior widely used in writings and discussions of health related behavior. This model suggests that people who view a condition as serious, themselves as vulnerable to it, and the health activity as effective are more likely than others to participate in that activity. There is need for considerably more research, and more refined research on this model before it is known how well it works either to explain or to predict preventive health behavior. Little work has been done with the model on older populations and little or none on persons of Black or Portuguese background. That is one of the reasons for selecting the two senior centers involved in this study. For some time I have been interested in health issues, problems, and behaviors of racial and ethnic minorities, and this interest was reinforced by my attendance last December at the Conference on the Health of Black Americans held in Atlanta, Georgia in honor of W. E.B. DuBois.

I hope that the findings reported in this paper are useful to persons involved in predicting and planning for the preventive health behavior of senior citizens in Rhode Island. It is an effort to provide some systematic, organized, uniformly gathered data which can serve to supplement intuitive judgments and assessments about the involvement of senior citizens in the Swine Flu Inoculation Program.

B. Methodology. During the months of March and April 1977, 123 senior citizens who were active members of the two senior centers involved in this study were personally

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interviewed, sometimes in their homes, sometimes at the senior center, by other senior citizens in the case of St. Martin de Porres Center, and by undergraduate students, the principal investigator, and a graduate student in the case of the Fox Point Senior Center. The interviews averaged about one-half hour each and involved the use of an eleven-page, 45-item interview schedule containing both open-ended and closed-type items. The samples of respondents were chosen by means of a table of random numbers, after prenumbering the file cards of the active members. An active member for purposes of this study was defined as one who had been at the center for meals at least two times in the two months preceding the sample selection.

Table 1 reflects the relative sizes of the total population of active members, the sample size, and size of the respondent group we ended up with. Over one-fourth of the active members at each center were interviewed. The response rate for the samples chosen was 75 per cent for St. Martin de Porres and 54 per cent for Fox Point. Detailed information about those who did not respond is not available; so we cannot say exactly how closely the respondents and their responses resemble either the entire sample chosen or the entire active member population of either center.

THE FINDINGS

A. The Respondents. Generally the respondents at both of the senior centers were of low-income (between $2,000 and $3,999 gross family income for 1976), younger than age 75 (three-fourths), female (about two-thirds), and not living with a spouse (about two-thirds) and differed from each other in racial background, with 15 per cent of the St. Martin de Porres respondents not black, compared to 79 per cent of the Fox Point respondents.

Educationally the more advantaged group is that from St. Martin de Porres--they have more persons with a high school education or better and fewer with less than eight years of education.

More of the St. Martin de Porres respondents who had worked outside the home had occupations that were classified as professional, but fewer of them had been in jobs classified as technical and more in household service jobs. More detail on selected demographic characteristics of the two samples is contained in Tables 2 through 4.

B. Participation in the Swine Flu Inoculation Program. Just over one-half of all the respondents received a Swine Flu inoculation (54 per cent). For St. Martin de Porres the figure is 52 per cent; for Fox Point, 56 per cent.

Some national comparative data help put these findings in context: For the nation as a whole 35 per cent reported getting a Swine Flu injection. For those age 50 and over the figure is 44 per cent, for those with incomes of under $5,000 it is 37 per cent, for black persons 19 per cent, white 38, women 36, men 35, and for those living in the East, 31 per cent. Locally, a figure of 73 per cent is reported in a study

TABLE 1

Relative Size of the Total Population, Sample Chosen, and Respondents, by Senior Center

	Senior Center	
	St. Martin de Porres	Fox Point
Total Population of Active Members	232	200
Number Chosen for Sample	88	103
Percentage of Total Population of Active Members	38%	53%
Number of Respondents	66	57
Percentage of Sample	75%	54%
Percentage of Total Population of Active Members	28%	29%

TABLE 2

Selected Demographic Characteristics of Respondents, by Senior Center

(Percentages)

	Senior Center	
Characteristic	St. Martin de Porres	Fox Point
Not Living With Spouse	68	61
Age 75 or Over	25	23
Percentage Male	32	30
Race Not Black	15	79
Gross Family Income, 1976, Between $2,000 and $3,999.*	71	50

*36 per cent at St. Martin de Porres and 12 per cent at Fox Point did not choose to answer the income item. Based just on those who did, however, the former rank lower than the latter in income — only 2 per cent have incomes of $8,000 or more, compared to 12 per cent at Fox Point, while 68 per cent of the Fox Point and 85 per cent of the St. Martin de Porres seniors reported incomes of less than $5,000.

conducted by several Brown University medical students in November, 1976 in a highrise elderly housing project on the East Side of Providence.[1]

They received their inoculations primarily at their senior centers, one-half of the St. Martin de Porres and two-thirds of the Fox Point respondents.

Nearly all of those who reported receiving the inoculation said that, if they had it to do over again, they would still receive a Swine Flu immunization. The figures are 91 per cent for St. Martin de Porres and 84 per cent for the Fox Point respondents.

Fewer than one-half of all the respondents said they planned to have a flu inoculation of any kind in the future, and the percentage is lower for Fox Point than for St. Martin de Porres seniors (Table 5). These figures represent a decline from the percentages who actually received Swine Flu immunization. The decline is smaller for the Fox Point sample — 2 versus 12 percentage points. Applied to these two small samples this decline does not seem large or perhaps important. Statewide, however, if there were to be a decline of ten percentage points in the participation of senior citizens in a future flu immunization program, it could represent a large and important decline in the number of persons in the high-risk group who would receive a shot.

Why didn't some people participate? Because they feared side-effects, were advised against it by their doctor, or just didn't feel it was necessary. Side-effects was the reason given most often by the Fox Point respondents who did not participate, while those at St.

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TABLE 3

Educational Attainment, by Senior Center

(Percentages)

Education Completed	St. Martin de Porres	Fox Point
Less than 8 years	34	53
8 through 11 years	38	33
High School Graduate	20	09
Some Post-High School	05	04
Bachelor's Degree	02	02
Beyond Bachelor's	02	00
Total Percent	101*	101*
Total N	(63)	(57)

*Total per cent does not equal 100 due to rounding.

TABLE 4

Main Occupation of Persons Employed Outside the Home, by Senior Center

(Percentages)

	Senior Center	
Occupation	St. Martin de Porres	Fox Point
Technical	09	27
Service Work, Not Household	11	24
Household Service	17	00
General Labor	39	39
Professional	11	00
Total N	(54)	(51)

TABLE 5

Plans for Flu Shots, by Senior Center

(Percentages)

	Senior Center	
Plans Future Flu Shot	St. Martin de Porres	Fox Point
Yes	50	44
No	33	28
It Depends or Don't Know	16	27
Total Per Cent	99*	99*
Total N	(60)	(57)

*Total percentage does not equal 100 due to rounding

TABLE 6

Beliefs About Degree of Protection from Swine Flu, by Senior Center

(Percentages)

	Senior Center	
Beliefs	St. Martin de Porres	Fox Point
Completely Protected	30	25
Almost Completely	16	21
Somewhat	08	11
A Little	00	11
Not At All	20	16
Don't Know	27	18
Total Per Cent	101*	102*
Total N	(64)	(57)

*Total percentage does not equal 100 due to rounding



Martin de Porres gave equal weight to all three of these reasons, with 19 per cent listing all.

Nearly one-half do not feel very well protected, or just don't know. This question was asked of all respondents, whether or not they participated. For the latter, the question was phrased, "How much would the shot have helped protect you from getting the Swine Flu?" The results are reported in more detail in Table 6.

Over one-half of the respondents believed that the treatment was safe, but some 42 per cent felt it was not, or didn't know. One-fourth felt it to be unsafe; nearly a fifth said they just didn't know whether it was safe or not. For those who feel it is not safe, bad side-effects is the reason most often given.

Overall, 61 per cent of the respondents felt that the injection was safe at the time the Swine Flu Inoculation Program got underway. The figure for St. Martin de Porres is 52 per cent, for Fox Point 70 per cent.

More St. Martin de Porres participants believe that the injection is safe now than did at the time, while at Fox Point, fewer now think it is safe. The increase was six percentage points, the decrease 16. Why this is so is not known. It may be that their experiences differ with respect to knowledge about bad side-effects from the injection, or that they simply interpret the extent or nature of the side-effects differently.

C. Health Status and Availability of Care. Senior citizens see themselves as quite healthy. One-half of all the respondents rated themselves as in good health, on a scale ranging from excellent to poor. Health researchers accept self-ratings of health as a good indicator of actual health status. Sixty per cent of the St. Martin de Porres seniors rated their health as good, while 42 per cent of the Fox Point seniors so rated themselves. More Fox Point seniors, however, rated their health as excellent, (25 versus 15 per cent). A recent statewide survey of health status[2] revealed that 39 per cent of those aged 65 and over rated their health as good and 25 per cent as excellent. Our respondents compare favorably to the statewide sample. Table 7

TABLE 7

Self-Rating of Health, Senior Center Samples and Statewide Samples

(Percentages)

Self-Rating of Health	St. Martin de Porres	Fox Point	State
Excellent....	16	25	25
Good	60	42	39
Fair.....	22	32	29
Poor.....	02	02	07
Total Per Cent ..	100	101*	100
Total N.....	(63)	(57)	(108)

*Total percentage does not equal 100 due to rounding

TABLE 8

Regular Source of Health Care, by Senior Center

(Percentages)

Has a Regular:	St. Martin de Porres	Fox Point
Medical/Osteopathic Doctor...	92	86
Eye Doctor.....	70	73
Foot Doctor	37	27
Dentist.....	51	45

gives a detailed comparison of self-rated health status statewide and at the two senior centers.

Nearly all of the senior citizens interviewed stated that they have a regular medical or osteopathic doctor, nearly one-third a foot doctor, and one-half a dentist. Details are presented in Table 8.

Over one-third of the St. Martin de Porres senior citizens and 43 per cent of those at Fox Point reported that they have high blood pressure. This is surprising in light of the fact that black Americans suffer more than those who are not black from this condition, and most of the seniors at St. Martin de Porres are black. When asked to explain what high blood pressure is, very few at either senior center gave a very accurate reply, although virtually all of them were being treated for it.

Implications and Conclusions. Our findings, based as they are on a portion of a sample are incomplete and limited. However, it is better to plan with some data and analysis in hand rather than none. The fact is that our respondents constitute over one-fourth of the

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active senior citizens at the two cooperating centers, and with one exception, this is the only systematic, comparative, and organized set of data available on this topic for Providence senior citizens.

Health care planners and providers are faced with a very difficult task convincing senior citizens that they should have flu injections in the future. A bad press must be overcome, and trust established or reestablished if the fears of these high-risk people, often well-founded, are to be overcome. They need to be convinced that flu is of greater risk to them than to younger people, and told why. They must be informed about the probability of suffering bad side-effects, and about the relative risks of such side-effects and contracting the flu. Senior citizens also should be informed accurately and clearly about just how effective the inoculations are in preventing flu in persons of their age.

It is hoped that this paper will provide a basis for discussion, dialogue, and requests for further data or analysis from the University of Rhode Island Program in Gerontology, tailored to the needs of the health care providers and planners who seek to maintain or improve the level of participation of senior citizens in future inoculation and other preventive health programs.

SUMMARY

1. Fifty-four per cent of 123 senior citizens who are active members at two Providence, Rhode Island senior centers received a Swine Flu inoculation in the fall of 1976. One of the senior centers has a membership primarily of Black persons, the other of persons of Portuguese-American background.

2. Of those who received the Swine Flu inoculation, most, but not all would have it again. In one of the centers 16 per cent of those who received it would not do so again.

3. For all respondents, fewer than one-half plan to have an inoculation for any kind of flu in the future. The main reason is fear of bad side-effects.

4. About one-half of all respondents do not feel the injection did or would protect them very well.

5. Over 40 per cent of the respondents do not feel the injection is safe.

6. The respondents see themselves as healthy — the vast majority in good or excellent health. They generally have regular sources of medical/osteopathic, foot, eye, and dental care.

7. While over one-third have high blood pressure, and are being treated for it, very few could say what high blood pressure is.

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The interviewers at St. Martin de Porres were Henrietta Tidball, Dorothy Craighead, Mabel Sneed, and Geraldine Smith, themselves active members of the center. At Fox Point the interviewing was handled by students and by the principal investigator. The students were Lynn Rossi, Sue Griffin, Andrea Klimt (who did the Portuguese language interviewing) and graduate student Gerry Skettino, who also served as the Field Supervisor for the study.

Appreciation is also extended to the secretarial staff of the Program in Gerontology--Barbara George and Rita Reynolds, to Craig Goodwin, who did the coding of the questionnaires, and to Bobette Walton for keypunching.

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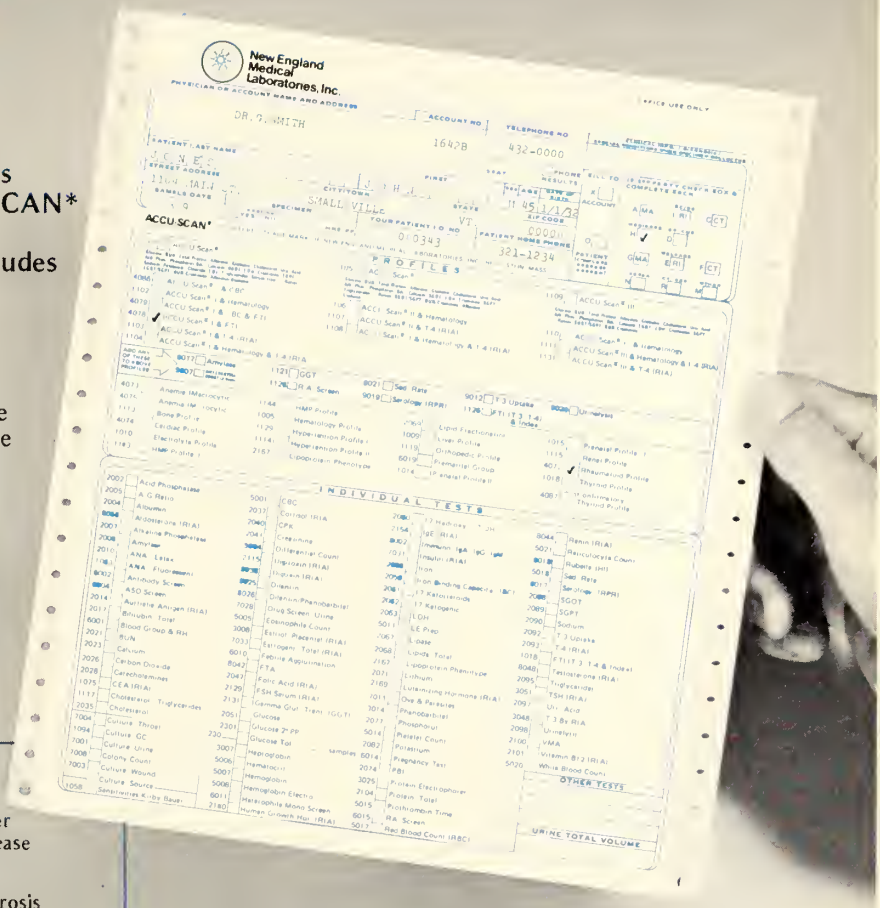
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36th Annual Charles V. Chapin Oration: The Physician's Role In Cross Infection

Convenience And Expediency So Dominate Our Profession That We Refuse To Shoulder The Responsibility For Leadership

By Carl W. Walter, M.D.

The honor of being selected to give the 36th Charles V. Chapin Oration has a unique significance for me. Chapin's career as a Public Health officer was dedicated to the control of communicable disease. He was a great debunker of myth, legend, and folklore. He focused on contact between members of intimate groups, such as family, as the mode of transmission. This emphasis created a constructive epidemiologic weapon. It was among family members, not between neighbors, that transmission occurred. Community hysteria disappeared along with quarantine and placarding of the premises of those with contagious disease. Chapin extended contact transmission to microbiologically identifiable channels such as water, food, and air. It was obvious to him that the impact of transmission by water, food, and air in a community was indistinguishable from physical contact among members of a family-like group.

Read at the 166th Scientific Assembly of the Rhode Island Medical Society on May 11, 1977

CARL W. WALTER, M.D., *Clinical Professor Surgery, Emeritus, Harvard Medical School; Surgeon, Emeritus, Peter Bent Brigham Hospital*

CHAPIN'S CONCEPTS APPLICABLE

My career can be looked upon as an extension of Chapin into the hospital. Each patient accumulates a distinct professional family organized to administer "tender loving care". I have studied the microbiologic impact of the professionals that are marshalled to care for the patient. The invasive intimacy of that care perpetuates cross infection in hospitals.

Convenience and expediency so dominate our profession that the teachings of Chapin and his intellectual forebears of the past century and a half go unheeded. The clinician and his patient continue in jeopardy because of proclamations of experts who seldom care for patients. Such experts refuse to understand the import of the very science they ostensively exploit to justify a favorable ratio of cost versus benefit. Others pamper customs and fads of personnel without questioning the hazard to patients.

The epidemiologic and microbiologic facts are simple. I have selected a few factors in cross infection -- some old, some new -- some from the literature -- to illustrate the microbial kinetics that flourish because of lack of perceptive leadership. It is incumbent on each of you -- the patient's physician -- to recognize a personal responsibility for such leadership in the continual struggle to prevent cross infection.

OVERT INFECTION

The impact of overt infection on the hospital is a logical introduction to a brief exploration of nosocomial infection. The extension of overt infection to covert carriage among personnel and patients is the key to nosocomial infection. Unfortunately most physicians are likely to lose interest promptly because my description of the role of carriers in postoperative wound infections seems foreign to their practice. However, faulty design of infusion apparatus traps most physicians into contaminating intravenous infusions. Everybody is a potential bacteriologic hazard to his patient; the exposure is more conspicuous and identifiable in surgery.

The patient with overt infection who is my example was a 58 year old widowed telegrapher who had crops of boils over 10 years.[1] Her husband, who had multiple myeloma, died of sepsis in 1955. Three weeks prior to hospitalization in January 1958 a small carbuncle developed on her left forearm. One week later a similar lesion appeared in the small of her back. The following week a larger carbuncle formed at the areola of her right breast.

The patient was admitted to a disinfected room. The floor, bedding, and air were cultured to describe the bacteriology of the environment. Periodically during her hospital stay the bedding, the floor, the air, and room dust were cultured to demonstrate the shedding pattern of this patient with overt infection.

Cultures were also made of the patient's nasopharynx, gastric juice, anal canal, urine, the skin of the hands and feet, and each of the carbuncles. The staphylococci recovered from all sources, except the gastric juice which was sterile, were of unique interest because they were atypical and strange to the hospital. Cultural characteristics were distinctive. The staphylococci were susceptible to all antibiotics and were lysed by bacteriophage group I, type 79.

The bacteriologic studies illustrate important concepts too little appreciated by physicians: (1) the carbuncles were local manifestations of systemic staphylococcal disease; and (2) dry gauze dressings did not confine the staphylococci.

Because the staphylococci were unique, they could be followed as they shed into the environment. Cultures obtained from the sheet and a pillow case when the bed was clean and after it had been used for 14 hours are shown in Figure 1. Note the small colonies with limited pigmentation that grew where the used sheet and pillow case contacted the blood agar. The Well's air centrifuge tubes shown on the right in Figure 2 show the bacteria captured from 5 cubic feet of air in the unoccupied room; those on the left after the patient had occupied the room overnight. Cultures of dust picked up from the window sill are shown in Figure 3. Note the staphylococcus colonies scattered throughout. The source of these organisms proved to be this patient.

Figure 4 illustrates the shedding of bacteria

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Figure 1. Cultures obtained by pressing a blood agar plate against bedding. (Lower) Before occupancy; (Upper) after 14 hours' occupancy. (Reproduced from Walter, CW, et al[1]).

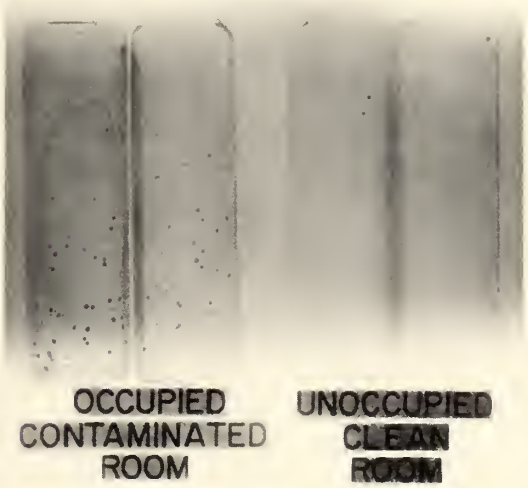


Figure 2. Well's air centrifuge tubes exposed to five cubic feet of air prior to admission (Left) and during bedmaking on the morning following admission (Right). (Reproduced from Walter, CW, et al[1]).

from the patient. Bacteria are whisked into the air in sufficient numbers by activity, such as bedmaking, to inoculate the nasopharynx of anyone in the area. The accumulation of bacteria over successive days makes the environment increasingly hazardous.

Dry dressings are customarily thought to be harmless. This is not so. Figure 5 shows phage 79 staphylococci on a contact plate that was pressed against the multiple layered dry gauze dressing covering a carbuncle and the prints of fingers made after grasping that dressing to remove it. The bacteria that had permeated the dressing are staged to shed into the environment and are ready for contact transmission.

Our patient demonstrates two crucial observations made by Semmelweis upon epidemiologic analysis of two outbreaks of puerperal sepsis which resulted in 34 deaths. First, septic discharge from an overt lesion can be transferred by washed fingers to other patients.* [1] Second, septic matter shed into the environment from a lesion draining pus can cause infection in other patients.** [2]

The infected patient is the source of the bacteria that cause nosocomial infection. He must be isolated. This is difficult to achieve in routine hospital practice. A basic obstacle is the physician's denial that his patient with overt infection is a hazard.

CROSS INFECTION

Several widely ignored factors are responsible for the persistence of cross infection: (1) It is based broadly throughout the hospital and not confined to just one functional area. (2) The entire hospital environment is a bacteriologic backdrop for activities that disseminate bacteria. (3) All patients and personnel reflect their exposure to this environment by becoming colonized by the accumulated bacterial debris from previous patients and carriers, thus extending cross infection in space and time.[3]

Surfaces, including skin, instruments, devices, clothing, bedding, equipment, and furniture involved in direct contact with patients are obviously primary vehicles in cross infection. Yet, when contact transmission is controlled by aseptic technique, cross infection stubbornly persists — deployed in location or separated by intervals sufficient to exclude contact as the mode of transmission. In this situation, surfaces throughout the entire hospital succeed to a paramount role as secondary reservoirs of bacteria that contaminate the ventilation vortex in which the hospital population lives (Figure 6).[4]

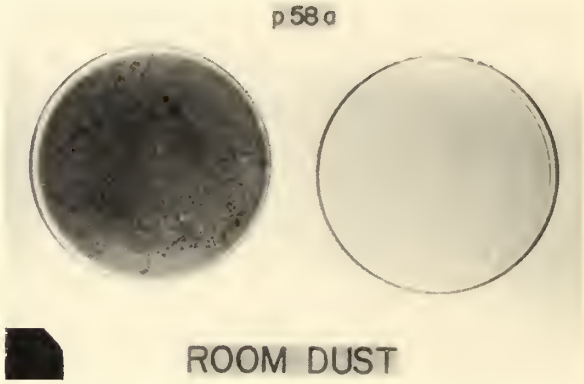


Figure 3. Cultures made by swabbing a demarked area of the window sill: (Left) after 14 hours' occupancy; (Right) before occupancy. (Reproduced from Walter, CW, et al[1]).

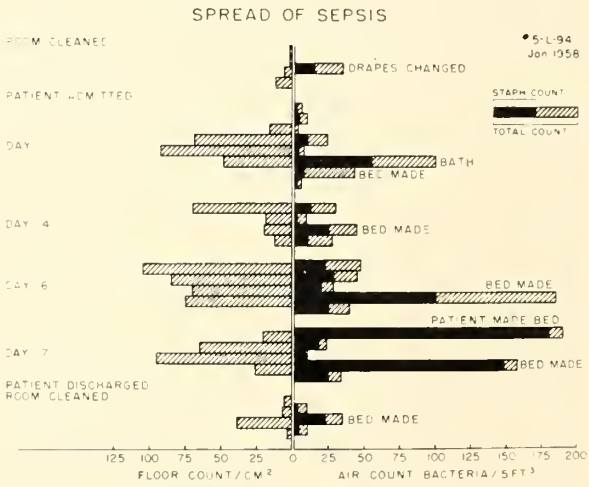


Figure 4. Bacterial counts of floor and room air while patient was being cared for under isolation technique. Staphylococci recovered from air after drapes were changed were untypable; the remainder were type 79. This type persisted in the room following routine cleaning on discharge (Reproduced from Walter, CW, et al[1]).

*Eleven of twelve women died of puerperal sepsis. They had been examined in sequence after a patient with a sloughing carcinoma of the cervix. Hands of the examiners had been disinfected with chlorinated lime prior to the initial examination; hands were simply washed with soap and water following subsequent patient contact, P. 396. Semmelweis IP: Etiology, Concept and Prophylaxis of Childbed Fever, April, 41).

**During October and November "1847 nearly all women on the ward died" while a patient with a carious knee was present, P. 397. (Semmelweis IP: Etiology, Concept and Prophylaxis of Childbed Fever, April, 41).

Dust particles may settle onto a burn, open wound, or other susceptible tissue such as a tracheostomy or unhealed umbilicus. Of greater epidemiologic import is the fact that they are inhaled and inoculate the mucous membranes of the upper respiratory tract. Colonization results, and the subsequent attenuated infection is known as the carrier state (Table 1). A mechanical example is the aspiration of airborne bacteria into nebulizers where multiplication occurs. The contaminated water is thrust into the respiratory tract.[5]

Disseminating carriers lend ubiquity and continuity to the spread of bacteria by expelling, wherever they go, droplets and droplet nuclei which may be sprayed directly into wounds or be inhaled by others. Droplets settle on skin, clothing, and other surfaces, eventually giving rise to bacteria-laden lint and dust that readily reenter the cycle of sepsis.

THE SURGICAL TEAM

Members of the surgical team are the couriers in the transmission of hospital-based infection to the aseptic field, for they, too, share the occupational hazard of the hospital environment (Table 2). Personnel remain the chief source of exogenous bacteria in the properly managed operating room.

A study of patients, personnel, and environment of 250 operations described the bacterial exposure of the patient during surgery. The postoperative wound infection rate was 8.4 per cent. Four-fifths resulted from endogenous seeding; one-fifth was due to exogenous bacteria (Table 3). The sources of these bacteria were several staphylococcus carriers.

An impressive association between postoperative wound infection and duration of preoperative hospitalization was demonstrated in a study of five collaborating hospitals (Figure 7)[6]. Nasal colonization by pathogenic bacteria acquired during prolonged hospitalization has been described in the literature. The patient whose nasal or pharyngeal membrane is colonized by bacteria indigenous to the hospital is poised for invasion by these pathogens. The portal of entry is readily demonstrated - mucous

(Continued on Next Page)



Figure 5. (Left) bacteria imprinted on blood agar by tips of fingers that had removed a gauze dressing over the granulating crater of carbuncle; (Right) impression plate made on outer layer of dressing to illustrate bacteria left on surface by evaporation of wound secretion.

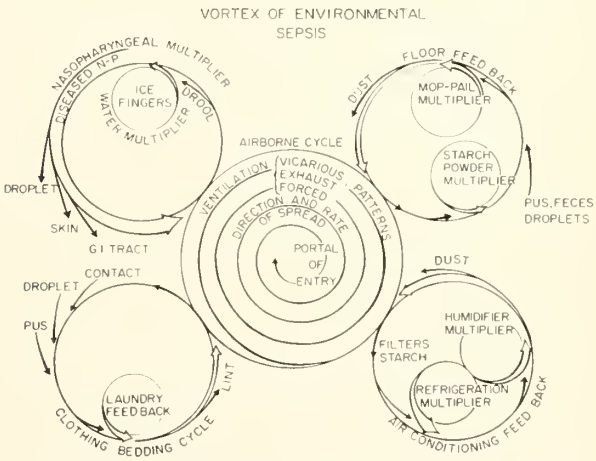


Figure 6. Vortex of environmental sepsis. Air currents patterned by ventilation practices spread bacteria from the four centers which accumulate organisms. The portal of entry may be a wound but more often it is the mucous membrane of the nasopharynx. The nasopharynx is a major multiplier, and bacteria are spread to the skin, clothing, handkerchiefs, and inwardly to the gastrointestinal tract. Droplets expelled during respiration, coughing, or talking settle. The bacteria in the droplet dry and are picked up on mops, planted in the mop pail, and mutiply. When next the floor is mopped, the progeny is painted on the floor. The film of water dries, and the bacteria are scuffed into the air. Bacteria shed by patients and carriers contaminate clothing and bedding. Multiplication occurs in textile wet with perspiration or spillage. When soiled linen is handled, bacteria are sent into the air. Sorting soiled linen contaminates the air in the laundry, resulting in the feedback of bacteria on the finished product. Bacteria get into the air conditioning system, and multiply on refrigerator coils or in the humidifying chamber. When the relative humidity changes, or when the equipment is shut down, the heat exchange surfaces dry. The bacteria flake off and are fed back into the ventilation vortex. Droplet nuclei are aerodynamically stable and remain suspended until inhaled or otherwise removed from the air. (Reproduced from Walter CW[4], Reprinted from the December 1958 issue of THE MODERN HOSPITAL, Copyright, Crain Communications, Inc. All rights reserved.)

membrane abraded or lacerated by tube, airway, or laryngoscope. The inflammatory reaction that ensues is the source of bacteria or septic thrombi.

Identification of one carrier resulted in documentation of airborne infection during surgery.[7] His duties were limited to recording activity and collecting samples. The mere presence of this disseminating carrier in the periphery of the operating room resulted in two wound infections among 169 patients exposed (1.2 percent). The infections were recognized on the 17th and 38th days postoperatively. The bacteria were recovered from extruded sutures. No other carrier of the specific phage type responsible for the two infections was found. During 82 operations the carrier's staphylococcus was recovered from one or more environmental cultures and from 56 on the aseptic field. In 42 operations fall-out plates in the periphery of the room showed the same organism. Volume air cultures were positive during 19 operations. A disseminating carrier, conventionally

TABLE 1

S. Aureus Carriers in 73 High School Students*

Time	Bacteria Present
Before 4 hr. in surgical ward	49%
After 4 hr. in surgical ward	58%

*Seventy-three high school girls with no recent contact with the hospital environment sat around a table in the center of a square 16-bed open ward for 4 hours during the period when beds were being made. S. aureus of the phage patterns prevalent in the environment and septic wounds of patients isolated by barrier nursing were cultured from the nasopharynx of seven. Carriage of S. aureus increased 12 per cent. The high rate of carriage is typical of the teenage population. (Reproduced from Walter, C. W., et al[3] with the Permission of the Publisher.)

TABLE 2

S. Aureus Carriers Among Operating Room Personnel*

Carriers	Percentage
Operating Room Nurses	21
Surgeons	33
Anesthetists	57
Orderlies	71

*The carrier rate is low among the nurses who are protected by masking while working in a hygienic environment. The higher rate among surgeons reflects the hazard of entering general hospital environment. The occupational hazard of intimate contact with patients and bedding is illustrated by the higher rate among anesthesiologists and orderlies. Faulty aseptic technique and lack of training intensify the hazard. (Reproduced from Walter, C.W., et al[3] with the Permission of the Publisher.)

TABLE 3

Bacteria in 21 Postoperative Wound Infections Following 250 Operations

	Staphylococcus Aureus	Streptococcus Pyogenes	Gram-Negative	Mixed
EXOGENOUS				
Personnel Carrier	4			
ENDOGENOUS				
Patient Nasopharangeal Carrier	3			
SURGICAL SPECIMEN.....	1	1	2	
URINE	1		3	
PREVIOUS WOUND	1		3	1
SURGICAL ERROR			1	

The bacterial exposure of 250 individual patients scheduled randomly for surgery at 9:00 a.m. on Tuesdays and Thursdays over 20 months. Twenty-one postoperative infections were discovered; a rate of 8.4 per cent. The source and kind of bacteria are tabulated.

TABLE 4

Summary of 43 Postoperative Wound Infections

	Source*			
Infection	Anesthetist	Resident	Nurse	Intern
Neurological:				
Bacteriological identification...	3	6	1	1
Epidemiological association	3	8	14	
Orthopedic:				
Bacteriological identification...	3			
Thoracic:				
Bacteriological identification...	3			
Urological:				
Bacteriological identification...	1			

*Number of patients infected by each source (Reproduced from Walter, C.W., et al[3] with the Permission of the Publisher.)

masked, gowned, and shod at the periphery of the operating room, proved to be a hazard to the patients exposed.

The other carriers that were identified, a resident, an anesthetist, and a nurse, were studied prospectively to discover their impact on patients. Eighteen infections resulted from the participation of four disseminating carriers on the surgical team (Table 4). Complete data were not available on the intern and nurse; detailed information was obtained on the anesthetist and resident. Twenty-five additional neurosurgical infections were epidemiologically associated with the same carriers, but the bacteriologic evidence was inconclusive because the data were incomplete, untimely, or the phage patterns were not completely distinctive (Figure 8).

An anesthetist was epidemiologically associated with 13 infections. This woman was an overtly healthy, fastidious individual. She had psoriasis of the scalp with several blotches on extensor surfaces of the extremities. Onychomycosis involved the majority of the nails of both hands and feet. The skin of the hands was inflammed, rough, and scaly. Staphylococcus epidermidis was cultured from the psoriatic areas. Klebsiella pneumoniae (Type 21) was recovered from the subungual spaces of the fingers. Staphylococcus aureus (83A/6/7/42E/47/54/73/75/42B/83B/UC-18/81/82) was recovered repeatedly from her nostrils, throat, hands, and perineum.

A neurosurgical resident was epidemiologically associated with 14 infections. This man carried three different types of S. aureus in sequence, two of them were recovered from infections. The initial series of three infections in 1963 was due to S. aureus (52/52A/79/7/73/75/80/82) recovered from the nostrils. In 1965 three infections were due to a different type (52/52A/80/81) that was isolated from the throat.

The disseminating characteristics of the four carriers incriminated in postoperative sepsis were studied by determining the bacterial contamination of a confined volume of air during a standard exercise program. Ten overtly healthy hospital employees were also studied. All 14 subjects were daily bathers and had grossly clean skin. Volume air samples (Figure 9) and settling plates demonstrated the number and size of the bacteria-laden particles shed.

The data show that two (the resident and intern) of the carriers implicated in wound infections were predominantly throat disseminators; the other two (the anesthetist and the nurse) were both throat and skin dispersers. Shedding by the anesthetist was controlled by showering, whereas dispersal was enhanced by showering by the nurse.

The import of shedding in the anesthetist was revealed by a review of 2,000 consecutive patients she had attended. Two hundred fiftysix postoperative infections were associated with her presence.

A classic epidemic of puerperal fever due to type 28 beta-hemolytic Streptococcus

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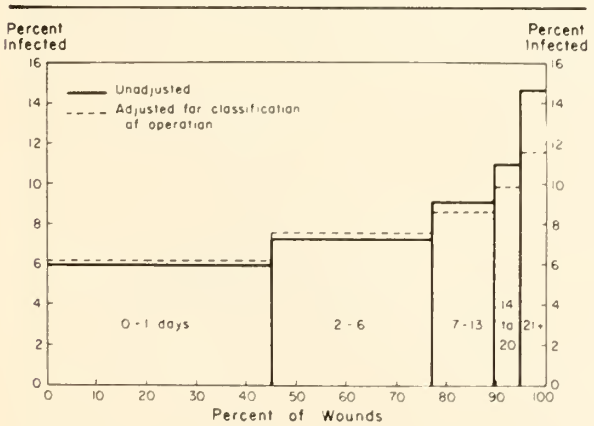


Figure 7. Percentage of wounds infected by duration of preoperative hospitalization in days. There was a steady increase from 6.0 per cent to 14.7 per cent after 21 days. (Reproduced with permission of the publisher[5]).

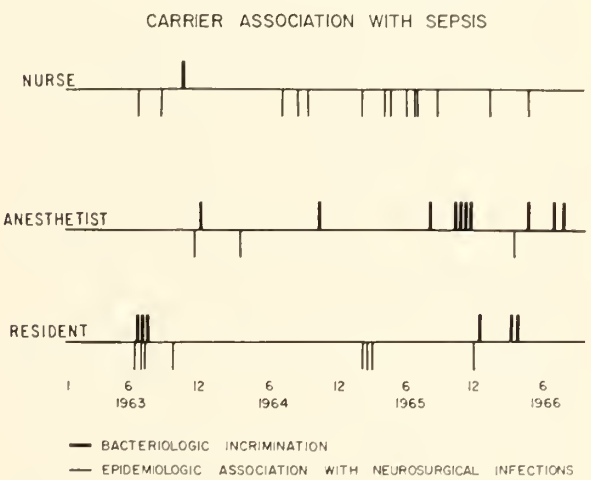


Figure 8. Epidemiological association of postoperative sepsis with disseminating carrier on team. Standing bold bars indicate bacteriologic incrimination; dangling light bars indicate epidemiologic association. (Reproduced from Walter, CW, et al[3] with the permission of the publisher.)

pyogenes involved 20 mothers and 5 babies over a 10-day period.[8] An anesthesiologist with overt streptococcal infection was identified as the source of the bacteria. The lesions, a small post-traumatic ulcer on the hypothenar eminence of his right hand and lymphangitis and lymphadenitis in the drainage area of a small weeping pustule on his leg, were ignored by the anesthesiologist as insignificant. He was the only carrier of the specific streptococcus among 871 staff and personnel. He had attended but 11 of the 20 mothers. The fact that new cases occurred for several days after he was banned from the delivery room also indicates persistence of the organism in the environment (Figures 10 and 11)[9,10].

Gryska and O'Dea[10] described the anatomy of an epidemic of 13 postoperative wound infections due to group A, beta-hemolytic S. pyogenes during a 1-month period. One patient died. Epidemiologic analysis implicated an anesthesiologist. Physical examination disclosed pruritis ani. Fourteen cultures of the body orifices, mucous membranes, and several skin surfaces were studied. Three cultures of the perineal and anal area demonstrated Group A, beta-hemolytic S. pyogenes. Streptococci from the wounds of 8 patients, a single colony on a settle plate in the operating room, and those from the carrier were demonstrated to be bacteriogenic-agglutination type 12, not

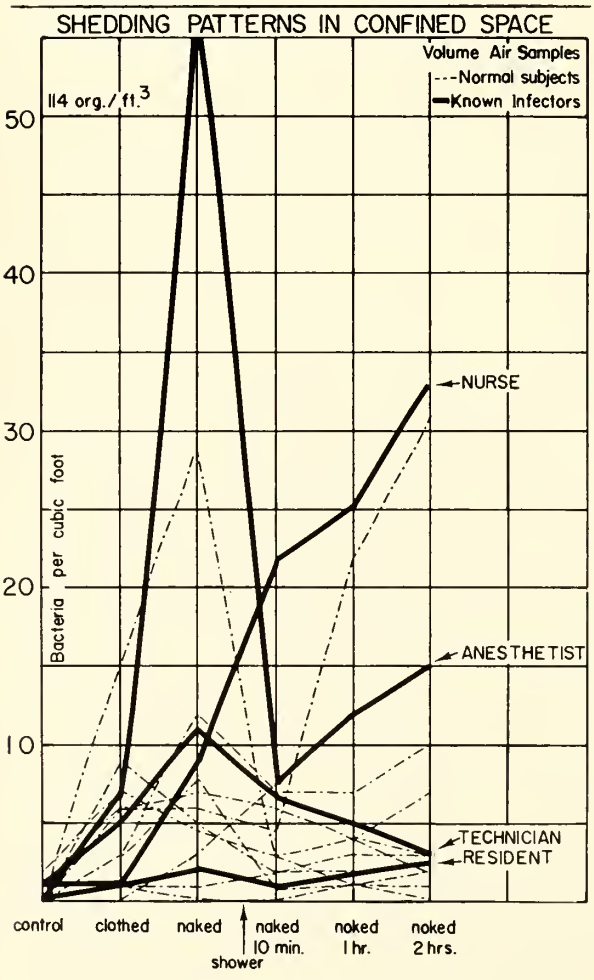


Figure 9. Shedding patterns of 14 subjects in confined space. The disseminating carriers have been accentuated. Note that two, the anesthetist and nurse, are predominantly skin shedders; the resident and technician disseminate from the throat. (Reproduced from Walter, CW, et al[3] with the permission of the publisher.)

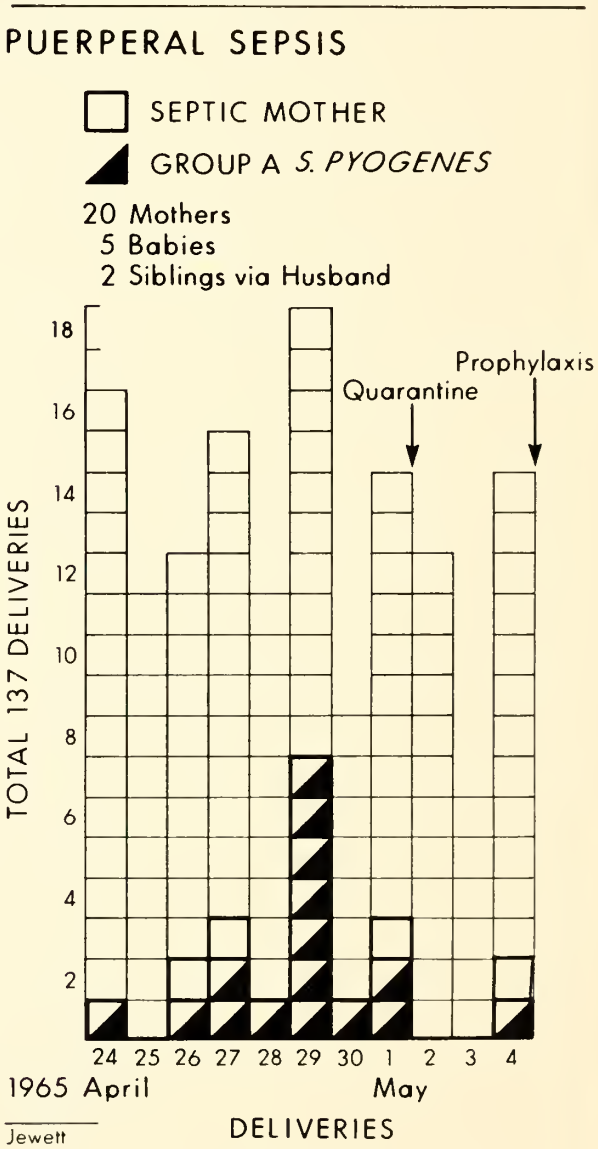


Figure 10. During classic outbreak of puerperal sepsis, type 7-28, group A, beta-hemolytic S. pyogenes was isolated from 16 of 20 critically ill mothers. (Reproduced from Walter, CW,[9] with the permission of the publisher. Data from Jewett and associates[8]).

typable for M. protein. The attack rate was 7 per cent of the 183 patients the anesthesiologist attended.

Dineen and Drusin[11] attributed two outbreaks of postoperative wound infection to hair carriage of S. aureus. Cultures of his hair bacteriologically incriminated a surgical resident with 11 postoperative wound infections. Three deaths occurred. There were two clusters of infections separated by a month during which he disinfected his hair with povidone-iodine shampoo daily. When this regime was abandoned, wound infections recurred and persisted until the service was shut down pending lapse of his tour of duty. Dineen's statistical portrayal of this outbreak showed how collective data masked the hazard of the disseminating carrier. The resident's 14 per cent postoperative infection rate was hidden in the 4 per cent rate that prevailed on the service. Surveillance focuses on an emerging pattern of sepsis and permits early control by differentiating between individual and group performance (Table 5).

TABLE 5

Hair Carriage — Wound Infection

	Carrier	Others	Total
Operations...	80	209	289
Infection	11	1	12
% Infected ...	13.7	0.5	4.15

(Data from Dineen, P, and Drusin, L[11])

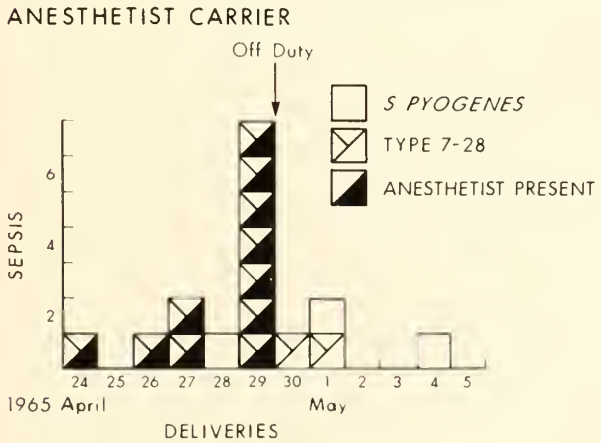


Figure 11. Anesthetist presence during delivery. Persistence of bacteria in delivery room resulted in additional cases after he was banned. (Reproduced from Walter, CW,[9] with the permission of the publisher. Data from Jewett and associates[8]).

Dineen's other cluster of infections centered on a staff nurse on a transplant ward. She had seborrheic dermatitis of the scalp. Cultures of the lesions and the subungual spaces grew S. aureus with a phage pattern identical with those recovered from the infected wounds of 5 patients. A regime for the control of the dermatitis and disinfection of hair and hands permitted her to continue professional activities, while cultures remained free of S. aureus.

The role of dermatitis in the dispersal of S. aureus is emphasized by Payne's analysis[12] of an outbreak of S. aureus infection in which 33 surgical wounds identified an anesthesiologist as the source of a specific organism. Of 217 patients who had been operated upon in either of two operating rooms, 15.2 per cent became infected; of these, four (12.1 per cent) died. The anesthesiologist, a known nasal carrier of S. aureus, suffered an exacerbation of psoriasis a month prior to the outbreak. When he returned to duty, his skin was desquamating. The outbreak ensued.

This outbreak is of particular interest because infections continued to occur in patients operated upon for 5 and 10 days respectively after the anesthesiologist's last attendance in each of two operating rooms (Figure 12). Settle plates showed from 10 to 28 colonies per hour of exposure; 5 per cent were S. aureus, despite ventilation at 17 air changes per hour and routine cleaning. The rooms were ultimately disinfected with sodium hypochlorite and formalin to terminate the environmental source. The outbreak also illustrates the prolonged interval between operation and the clinical recognition of wound infection that initiated culturing (Figure 13).

The hazard of dermatitis is emphasized by the study of 250 surgical cases. Hands with dermatitus could not be disinfected.[13] Indeed the only gloves with high counts of bacteria were stripped from hands with dermatitis (Figure 14).

ROLE OF INTRAVENOUS INFUSIONS

Infections attending intravenous infusions have been my special interest. Your patients may fall victim to the behavior of chance individuals involved in the technical aspects of his infusion. Errors and carelessness are compounded with change in the location of

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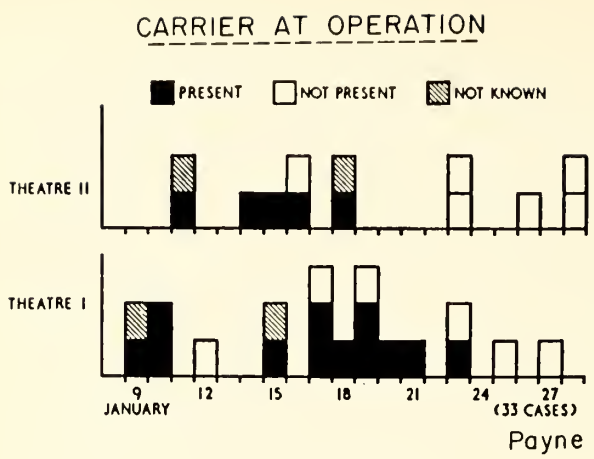


Figure 12. Retrospective analysis of the carrier's presence or absence at operation. Wound infections continued to develop after the anesthesiologist's last attendance in the operating room. The explanation most compatible with the bacterial cultures of air in the operating room is that staphylococcus survived in the environment. (Reproduced with permission of Payne, RW[12] and with the permission of the publisher).

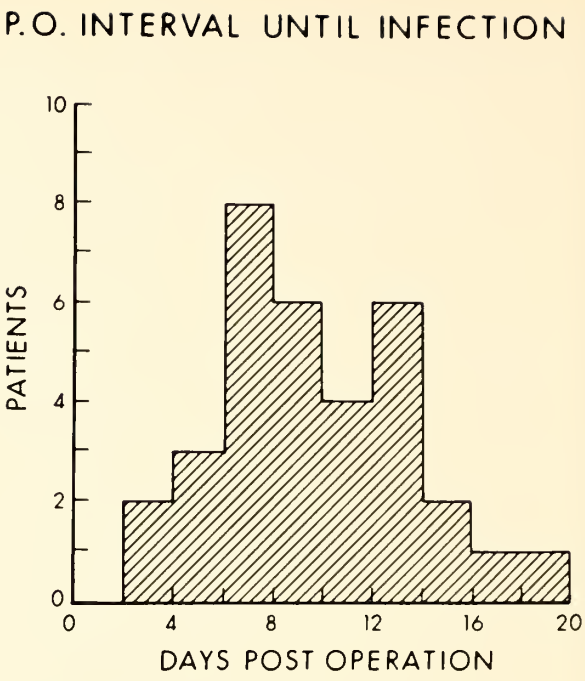


Figure 13. The postoperative interval until S. aureus was isolated from wound swabs. The traditional interpretation that contamination at operation is manifest early is obviously erroneous. (Reproduced with Permission of Payne, RW[12]and with the permission of the publisher).

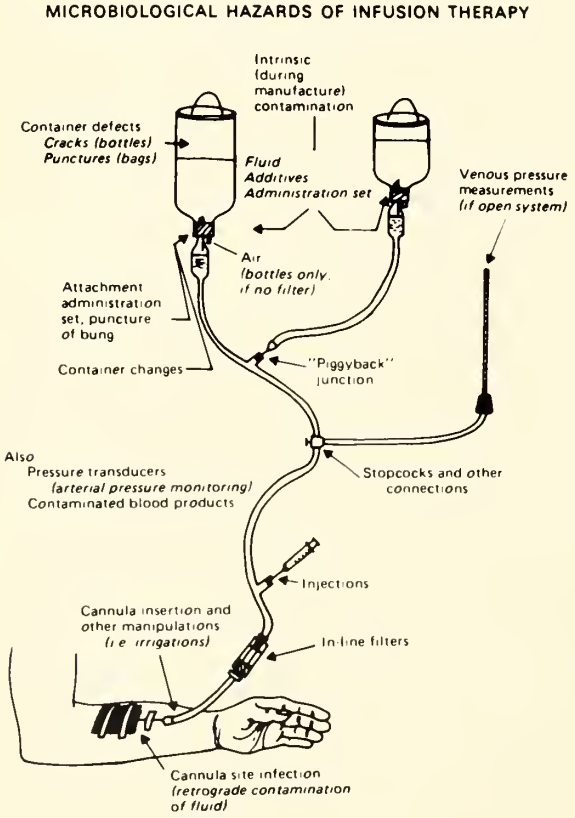


Figure 15. Potential sources for contamination of infusion fluid. (Reproduced with the permission of Maki, DG[14] and with the permission of the publisher).

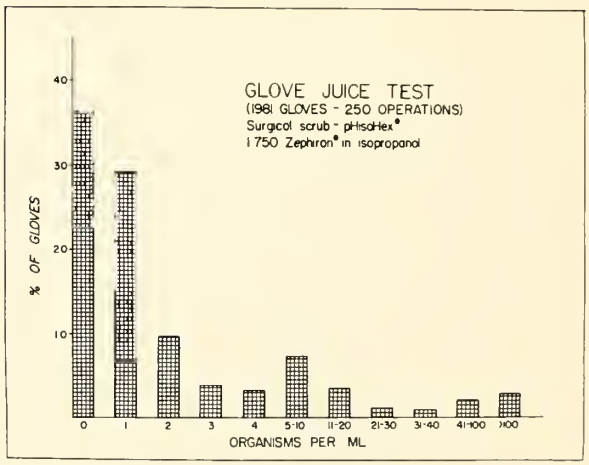


Figure 14. Disinfection of the hands. Gloves worn during operation were pulled off without eversion or contamination of the inside. The cavity was rinsed with 100 ml of Butterfield's buffer. Aliquots were plated to permit quantitation of bacteria recovered. The buffer from punctured gloves was discarded. Note that 96 percent of gloves yielded less than 100 organisms per ml. Counts greater than 100—some as high as 1 million—were encountered only in gloves worn on dermatitic hands. The length of time that the gloves were worn was not significant. (Reproduced from Walter, CW, et al[3] with the permission of the publisher).

patient care, the increase in duration of the infusion from hours to days, and the complexity in the composition of the parenteral fluid. Lack of continuity in responsibility for good practices is the glaring fault.

The Proceedings of the symposium "Microbiological Hazards of Infusion Therapy"[14] graphically itemizes the many portals of entry for bacteria (Figure 15). The majority are created by the concepts and habits of persons starting or maintaining the infusion.

A common error is depicted. That "dry sterile" gauze dressing applied to protect the wound of entry frequently becomes wet with blood, tissue fluid, or solution from a leaking connection. The skin macerates, and bacteria grow and penetrate the interface between the cannula — either a needle or catheter — and the skin. A strip of Micropore® tape applied over the puncture site effectively immobilizes the cannula, permits moisture to evaporate, and excludes fingers and insects.

The Proceedings further detail the sites for entry of bacteria shown in Figure 16. Several elaborations are pertinent. The term "contaminated disinfectants" is a misnomer. It is a synonym for ignorance on the part of the physician, nurse, pharmacist, or administrator. It is indicative of the neglect that dominates "that trivial procedure," phleboclysis. A suitable disinfectant correctly formulated, properly dispensed, and intelligently used is self-disinfecting.

*Micropore® Brand Surgical Tape, 3-M Company, St. Paul, Minnesota, U.S.A. 55101

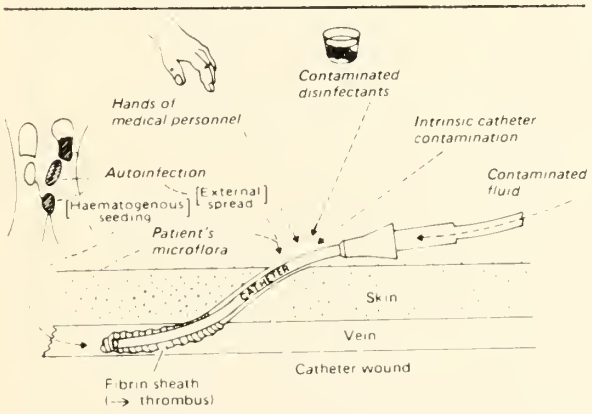


Figure 16. Sources of intravenous cannula-related infection. (Reproduced with the permission of Maki, DG[14] and with the permission of the publisher).

Disinfection of the skin merits examination. Figure 17 [15] depicts the problem. It is a photomicrograph of a plug of skin that was incubated in broth. Growth of bacteria visualized their location in the complex structure of the skin. The black layer on the surface represents colonies of transient bacteria. These reflect the bacterial exposure of recent contacts. The black mass beneath the desquamating layers consists of colonies of transients that have taken up domicile in the cuticle. Both sites of bacterial accumulation are removed by scrubbing. The black masses in the ducts of a sebaceous gland are bacteria resident in this structure of the dermis. These are not subject to removal by scrubbing and lie beyond the reach of most antiseptics other than chlorine.[16] Their growth can be suppressed by bacteriostatic agents applied to the skin daily for four or five days. Eventually excretion and desquamation rid the skin of the dormant bacteria. Resident bacteria also yield to systemic antibiotics. This was demonstrated when plugs of cadaver skin were taken to measure disinfection. The untreated control plugs were sterile. It soon became evident that few patients died during the 'pen and strep' era without receiving the combination. Systemic antibiotics are an evident factor in the success of parenteral therapy in certain patients despite faulty technic.

(Continued on Next Page)



Figure 17. Photomicrograph showing a section of skin removed from the female breast and incubated for six hours. The surface of the skin was cleaned with iodine and alcohol before removal, and the section was stained to show the bacteria. Large masses of bacteria are shown extending deep into the sebaceous gland and far below the skin surface. (Reproduced with the permission of Lovell, DL,[15] and with the permission of SURGERY, GYNECOLOGY & OBSTETRICS.)

Figure 18 pictures a series of five sponges alternately wet with contrasting antiseptic detergents, that were used to scrub the antecubital skin of a blood donor. Despite her appearance of impeccable cleanliness, the fingerprints on the first sponge show the soil scrubbed off with 1:750 aqueous Zephiran.* The second sponge shows the cuticle subsequently removed by 60 per cent isopropanol. Note the diminishing smudges with sequential scrubbing. The fifth sponge was grossly clean. The underlying epidermis was eventually exposed to the antiseptic action of Zephiran and isopropanol. Scrubbing provided time for antiseptic action — a critical requisite omitted by the quick swipe. An antiseptic simply painted or sprayed on skin forms a film over the surface of the cuticle. Underlying bacteria remain to contaminate the needle.

Growth of resident bacteria in the skin is provoked by the cannula. Until 1950 needles punched a hole through the skin. The core was displaced, plugged the lumen of the needle, or embolized. Needles are now designed to lance the skin to initiate penetration. Further insertion stretches the puncture to accommodate the cannula. The adjacent taut skin becomes ischemic. Resident bacteria multiply in the ring of necrosing dermis, and it becomes an intracutaneous source of bacteremia.

The fibrin film about the cannula that is illustrated in Figure 16 initially deposits as a monomolecular layer.[17,18] It also forms on the wall of the lumen when blood is "flashed back" to demonstrate a patent venipuncture. The Luer connector provides a cavity (Figure 19) where a blood clot as well as fibrin are deposited.[19] When flow is established, a fluid path forms through the cavity leaving the peripheral deposit stagnant. Once bacteria gain entry to this accumulation of clotted fibrin and blood, a nidus of bacteremia is established.

A more glaring fault of the Luer slip connector is its liability to contamination during manipulations inherent to its use. Figure 20 is a view of the connection as it is grasped to withdraw the needle from its protective sheath. A firm grasp often is required to prevent the connector from being pulled from the hub of the needle. The skin of the index finger and thumb imprints the exposed hub of the needle and the taper of the connector. Figure 21 illustrates the bacterial contamination that occurs. The pad of the thumb was painted with a four-hour broth culture of Escherichia coli and air dried. The

*Zephiran Chloride. Unadulterated benzalkonium chloride is designated because it does not support growth of gram negative bacteria as does the generic 1:750 aqueous benzalkonium chloride USP which contains up to 40% ammonium acetate as a buffer that supports growth of certain Pseudomonas cepacia strains. Winthrop Laboratories, 90 Park Avenue, New York, New York 10016, U.S.A.



Figure 18. Soil scrubbed from apparently clean antecubital skin.



Figure 19. Longitudinal section of Luer hub and connector shows cavity that harbors blood and fibrin.



Figure 20. Skin of thumb and index finger imprints Luer hub and slip.

needle was withdrawn from its sheath as illustrated in Figure 20 and the end of the hub imprinted on the surface of the agar beside the print of the contaminated thumb. The contact contamination is also shown. The original connector was withdrawn from the hub of the needle to permit replacement of the administration set so often advocated. The first 10 ml of fluid from the newly connected set was caught in a pour plate as it spurted from the needle. The entrainment of E. coli from the hub contaminated by contact with the thumbprint is obvious.

The residual clotted fibrin or blood inside the hub are thus readily contaminated. Bacteria grow in the clot suspended in the eddy currents in the throat of the needle and embolize. During manipulation of the joint, doses of bacteria are injected to cause the sudden chill and peak of fever described by attendants.

Figure 22 demonstrates that the Luer joint can be penetrated by bacteria. The administration set was plugged into the needle and the assemblage withdrawn from the needle sheath by a contaminated thumb. The needle was flushed with 5 per cent dextrose and saline prior to occluding it aseptically. The assemblage was then incubated for 48 hours at 37° C. The E. coli had spread throughout the liquid in the set and could be cultured from the tip of the piercing coupler. The retrograde growth of bacteria probably explains why contamination has been found in administration sets so often that many advocate daily replacement. The source of bacteria, the needle, is left indwelling.

BREACHES IN TECHNIQUE

It is obvious that intravenous apparatus must be manipulated by sterile gloves until bacteria-proof connections become available. Contact contamination of the Luer hub is the likely cause of the confusing and contradictory rates of infection described in the literature.

Exogenous contamination of the Luer hub is given a negligent dimension by the habit of grasping the needle sheath between the teeth when freeing the needle (Figure 23). Oral bacteria also are inoculated on the tubing of the administration set when the tubing is folded on itself and inserted between the teeth to maintain occlusion while the operator fishes for the vein. After each thrust of the needle the tubing is released to demonstrate flow. Each miss results in folding the tubing and reinserting it between the teeth, effectively contaminating the fingers. Facial hair or dangling tresses compound the bacterial hazard. Such practices can only be characterized as stupid.

Several other breaches in technic merit discussion. The bacterial hazard of phlebotomy and phleboclysis differ. The phlebotomist places a tourniquet to effect distension of the peripheral vein. The needle is then inserted directly into the vein through the skin overlying the prominent vein (Figure 24). The puncture in the skin is apposed to that in the vein. The bacterial hazard is minimal when the needle is withdrawn promptly. When the needle is left for phleboclysis, bacteria invade from the intracutaneous inflammatory reaction about the foreign body to the contiguous vein.

A needle intended for phleboclysis should be inserted through the skin at either side of the vein distal to the chosen site of venipuncture. It

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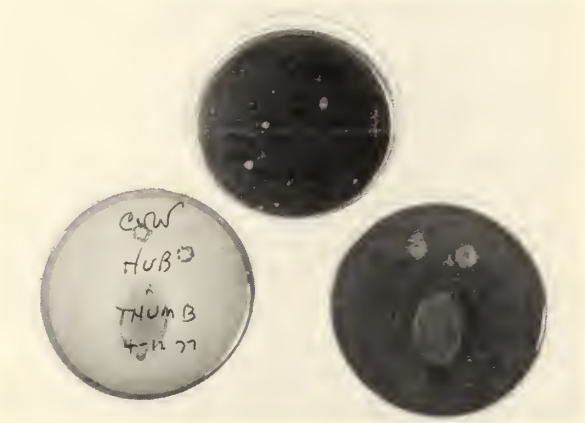


Figure 21. Culture plates demonstrating contamination from skin.



Figure 22. Culture plates show penetration of Luer connector and growth through set to the coupler.

is pushed through the subcutaneous tissue a centimeter or more before puncturing the vein (Figure 25). The fibroblasts lining the subcutaneous tunnel quickly form a barrier against invasion by bacteria. The cannula is mechanically stabilized in the tunnel by this technic.

Contamination of the needle was revealed at the Boston Blood Donor Center during World War II. Sterile cultures were reported on 60,658 consecutive bottles of blood samples when the plasma was aspirated. Suddenly 5 per cent of the cultures were positive. These were traced to one phlebotomist. She was an attractive anesthesiologist detached from the Navy. She was enormously popular among donors. In addition to a charming personality, she had the reputation of being THE painless phlebotomist. Popularity accounted for the disproportionately large numbers of donors she served. The painless phlebotomy was done with needles she dragged across a thumbnail to cull the painful hooked needles (Figure 26)! The fact that the nail was wet with alcohol did little to enhance the sterility of the needle. Recently I saw an anesthesiologist perform the identical ritual.

Palpation of the distended vein is a frequent breach in asepsis. It results in insertion of the needle through skin imprinted with whatever contaminates the fingertip. When that finger has just been used to groom hair from the path of vision, or stuff tubing between the teeth, the bacterial hazard is intensified. It is exceeded only by long hair dangling on the site of "that trivial" venipuncture. Dangling hair is an extension of the septic hand described by Semmelweis. It is the hazardous component of patient care.

THE EXAMPLE OF SEMMELWEIS

These examples of errant behavior carry us back to a revealing human experiment that occurred in 1847. In May of that year Ignatz Semmelweis demonstrated that hands could be freed of the septic matter that was acquired in the dissecting room. He required everyone to scrub his hands with chlorinated lime on entering the obstetrical clinic. Thereafter hands were washed with soap and water after each patient contact. Puerperal sepsis was controlled. In October he entered the clinic with a group of students. Thirteen patients awaited examination. All hands were disinfected with chlorinated lime prior to examining the first patient. She had a sloughing cancer of the cervix. The other twelve patients were examined in sequence. Two days later eleven of them were dead of puerperal sepsis. Goaded by this horror Semmelweis realized



Figure 23. Negligent practice that enhances contamination.

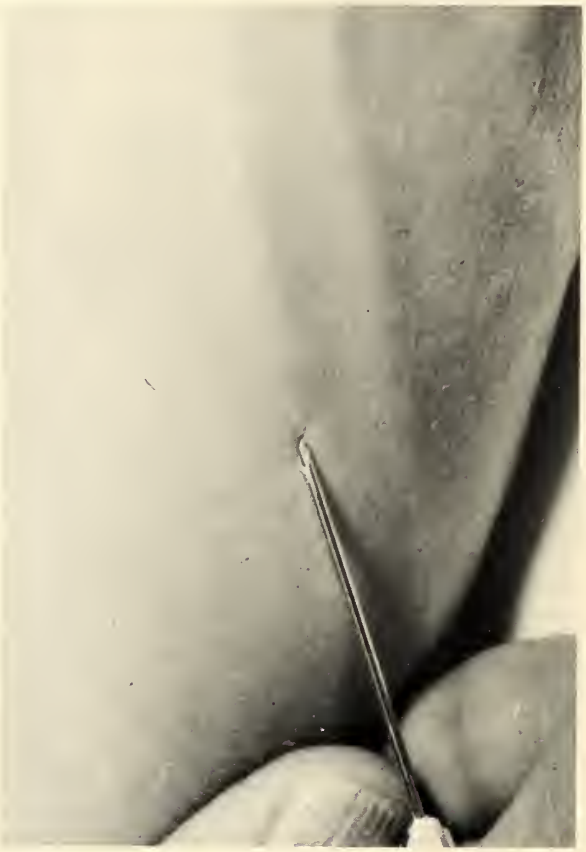


Figure 24. Venipuncture for phlebotomy.

that sepsis also stemmed from sloughing tissue of the living patient and that hands must be disinfected after every patient contact. Simple hand washing with soap and water did not suffice.

"The necessity for disinfecting the hand will ... always be present, and in order completely to attain this object, it is necessary to oil the hand well before any contact with decomposed matter, so that the decomposed matter may not penetrate into the pores of the skin; after such occupation the hand must be washed with soap, and then exposed to the action of a chemical agent, capable of destroying the decomposed matter not yet removed; we use for this purpose chloride of lime and wash until the hands are slippery. A hand so treated is completely disinfected."[2]



Figure 25. Venipuncture for phleboclysis.



Figure 26. Culling hooked needle.

One hundred thirty years later our profession still struggles with nosocomial infections. We refuse to shoulder the responsibility for leadership in the case of our patients. We evade reporting infections. We choose not to isolate overt infections. We refuse to collaborate with programs that standardize asepsis despite the fact that standardization focuses the training of subordinate members of the health care team. We pamper dissenters in a biologic setting where regimentation results in safer care of patients.

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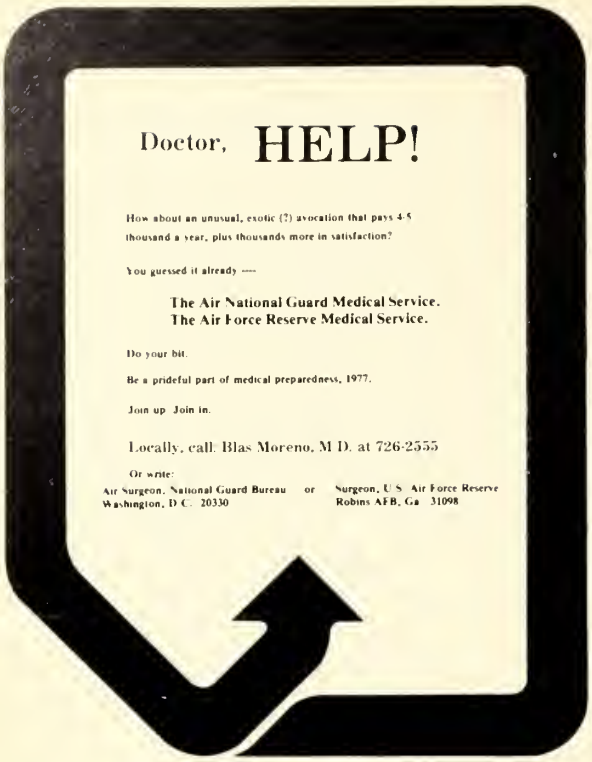
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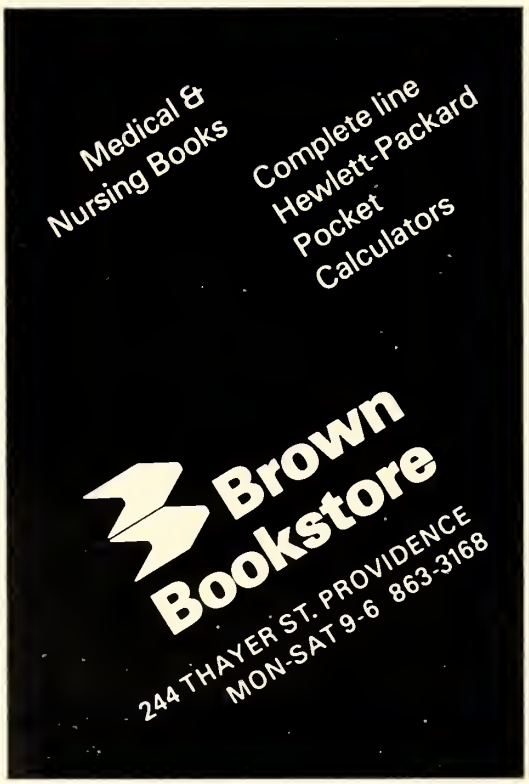
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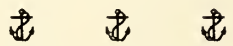
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RE-INVENTING THE WHEEL DEPARTMENT

Hospitals in four southwestern states have embarked upon productivity programs that promise to result in large cost savings, Business Week reports. Using the services of the hospital productivity center, a cost-cutting project sponsored by the Texas Hospital Association, are hospitals all over Texas, Louisiana, New Mexico and Arkansas. As a first result, 15 Texas hospitals with a total annual budget of $184.5 million have saved $10.7 million in 18 months. The 75 other hospitals that recently joined the project expect to realize comparable savings. The center tries to improve hospital productivity by "analyzing who does what and by figuring out how it can be done more cheaply." For example, at John Peter Smith Hospital in Fort Worth, nurses make the patients' beds and bring them meal trays, tasks formerly done by aides.

Extracted from the Blue Cross Digest



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Dosage for Vertigo* —The usual adult dosage for Antivert/25 is one tablet t.i.d.

BRIEF SUMMARY OF PRESCRIBING INFORMATION

*INDICATIONS. Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:

Effective: Management of nausea and vomiting and dizziness associated with motion sickness.

Possibly Effective: Management of vertigo associated with diseases affecting the vestibular system.

Final classification of the less than effective indications requires further investigation.

CONTRAINDICATIONS. Administration of Antivert (meclizine HCl) during pregnancy or to women who may become pregnant is contraindicated in view of the teratogenic effect of the drug in rats.

The administration of meclizine to pregnant rats during the 12-15 day of gestation has produced cleft palate in the offspring. Limited studies using doses of over 100 mg./kg./day in rabbits and 10 mg./kg./day in pigs and monkeys did not show cleft palate. Congeners of meclizine have caused cleft palate in species other than the rat.

Meclizine HCl is contraindicated in individuals who have shown a previous hypersensitivity to it.

WARNINGS. Since drowsiness may, on occasion, occur with use of this drug, patients should be warned of this possibility and cautioned against driving a car or operating dangerous machinery.

Usage in Children. Clinical studies establishing safety and effectiveness in children have not been done; therefore, usage is not recommended in the pediatric age group.

Usage in Pregnancy. See "Contraindications."

ADVERSE REACTIONS. Drowsiness, dry mouth and, on rare occasions, blurred vision have been reported.

More detailed professional information available on request.

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MAKES SENSE



Before prescribing, see complete prescribing information in SK&F Co. literature or PDR. A brief summary follows:

* **Warning**
This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual. If this combination represents the dosage so determined, its use may be more convenient in patient management. Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

* **Indications:** When the combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome. Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium sparing action of triamterene is warranted. (See Box Warning.) Routine use of diuretics in healthy pregnant women is inappropriate; they are indicated in pregnancy only when edema is due to pathological causes.

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently; both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

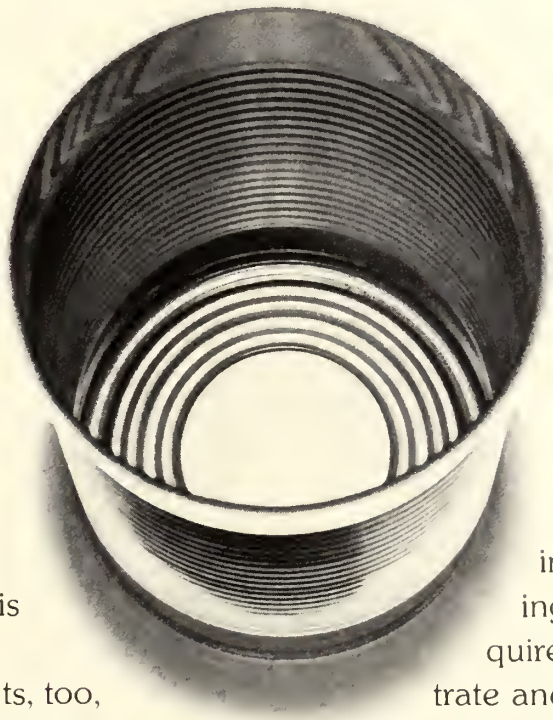
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Editorials

ULTRASOUND IN JAUNDICE

Ultrasound as a diagnostic instrument has gained both in popularity and in sophistication. It is noninvasive, completely harmless so far as is known, and increasingly useful in a variety of clinical situations. While laparotomy is often definitive in the diagnosis of cholestatic jaundice, there has been an increasing interest in noninvasive methods. Shortly after World War II the emergence of the liver profile was a landmark advance in the differential diagnosis of jaundice. Since then a number of diagnostic techniques have been developed. Among the available methods are isotope liver scan, transhepatic cholangiopancreatography (ERCP) and computerized tomography. E R C P requires a high degree of technical skill, while the CT Scan involves very expensive equipment and a costly procedure. Isotope liver scan has limited usefulness.

Recent reports[1, 2] emphasize the ease, safety, effectiveness, and cost advantages of gray scale ultrasonography in distinguishing intrahepatic from extrahepatic causes of jaundice. From 85 to 90 per cent of cases of jaundice can be separated on the basis of history, physical examination, and laboratory studies. The remainder have required transhepatic cholangiography or ERCP. With gray-scale ultrasound a diagnostic accuracy of 95 to 97 per cent has been achieved.

Isikoff and Diaconis have reported 40 cases in which there was surgical intervention, liver biopsy, or sufficient medical follow-up to confirm the diagnosis. Of 24 cases interpreted as extrahepatic, 23 were verified either by surgery or liver biopsy, with one false positive. Of the 16 cases in which no obstruction was indicated, all but one were confirmed by biopsy or clinical course. There was one false negative. Among the 24 extrahepatic cases diagnosis included stone, pancreatic carcinoma, benign stricture, pseudocyst, chronic pancreatitis, and carcinoma of the common duct.

Taylor and Rosenfield[2] have reported 150 patients of cholestatic jaundice studied prospectively. All had subsequent biopsy, autopsy, or surgery. Using the presence or absence of a dilated biliary tree as the criterion an intrahepatic or extrahepatic cause was correctly ascertained in 145 (97 per cent) of cases. All 64 patients with intrahepatic jaundice were correctly classified. Five of the remaining 86 patients, all five having gallstones, were incorrectly identified. In 82 patients (55 per cent) the specific cause of obstruction was determined.

It is possible with this modality to visualize dilated ducts within the liver parenchyma, dilated gall bladders, dilated extrahepatic ducts, stones, pseudocyst of the pancreas, and more specifically a dilated common bile duct terminating in a duodenal mass. After a diagnosis of obstruction is made by ultrasound, other methods may be applied to acquire more specific information regarding the site of the lesion and the possible cause. Those cases having no signs of obstruction can safely have a liver biopsy or medical follow-up.

The procedure, which is noninvasive and relatively inexpensive, can usually be carried out on an ambulatory basis. It is capable of producing very accurate differentiation as between extrahepatic and ultrahepatic cholestatic jaundice and may aid in the differential diagnosis within these categories. It has great value as a screening procedure before such invasive procedures as ERCP, percutaneous transhepatic cholangiography, or surgery.

It would appear that this well studied diagnostic method has many virtues and should be widely used in the differential diagnosis of jaundice.

REFERENCES

[1]Isikoff MB, Diaconis JN: Ultrasound, a new diagnostic approach to the jaundiced patient. **JAMA** 238:221, 18 Jul 77

[2]Taylor KTW, Rosenfield AT: Grey-scale ultrasonography in the differential diagnosis of jaundice. **Arch Surg** 112:820, Jul 77



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MYASTHENIA GRAVIS AN AUTOIMMUNE DISEASE

While myasthenia gravis was long described as a disorder of obscure etiology, evidence has lately been accumulating that it is in fact an autoimmune disorder. There have recently been strong indications that it is caused by an autoimmune reaction to the postsynaptic receptor protein, although immune complexes have never been directly demonstrated at the motor end-plate either by immunochemistry or immunoelectron microscopy. Engel and associates at the Mayo Clinic have now graphically demonstrated the presence of such immune complexes in the motor end-plate.

Contributing to the success of these studies is the fact that the neuromuscular junction is relatively accessible and much more readily visualized than suspected targets in the central nervous system.

In exquisitely graphic sections of muscle tissue observed under both light and electron-microscopy, deposits of the immune substances are clearly visible even to the untrained eye. More sophisticated electro-physiological correlations were also carried out to confirm these findings.

The authors believe that the results provide unambiguous evidence for a destructive autoimmune reaction involving the postsynaptic membrane. Immunopharmacologic blockade by the immune protein fractions may also contribute to the deficient function at the end-plates.

While this important contribution is complex in its execution, it is brilliant in the simplicity of its graphic demonstration and concept. This newer knowledge will further understanding of this serious disorder and will enable formulation of new therapeutic hypotheses for its treatment.

REFERENCES

[1]Engel AG, Lambert EH, Howard FM: Immune complexes (IgG and C3) at the motor end-plate in myasthenia gravis; ultrastructural and light microscopic localization and electrophysiologic correlations. **Mayo Clinic Proc** 52:267, May 77

[2]Editorial: Myasthenia gravis. **Mayo Clinic Proc** 52: 334, May 77

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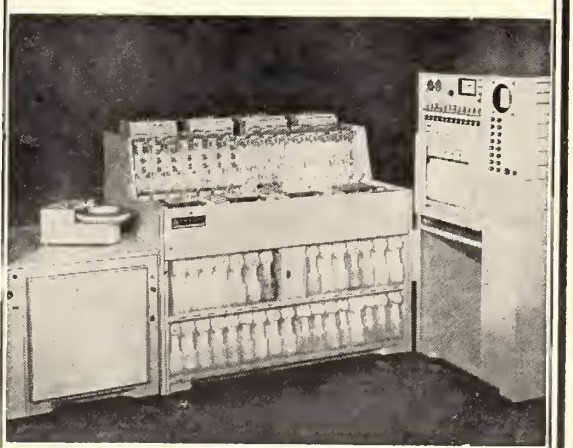
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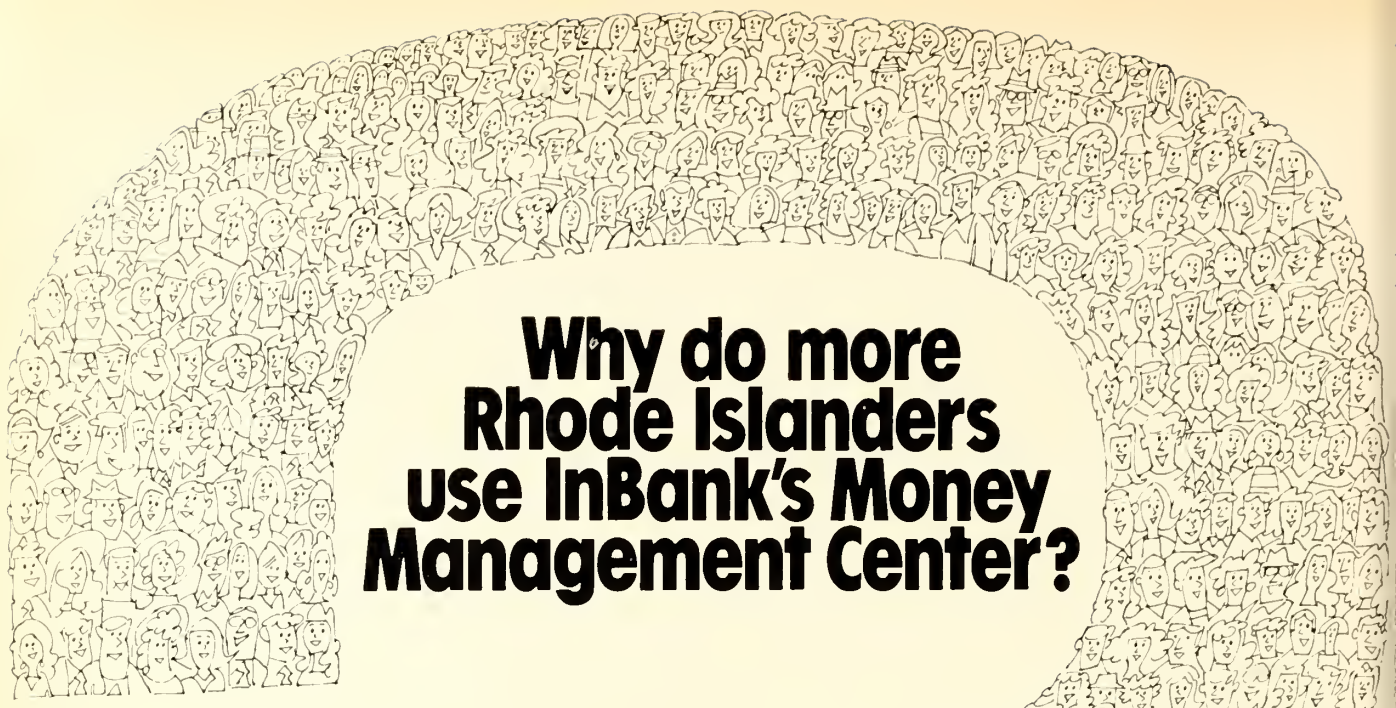
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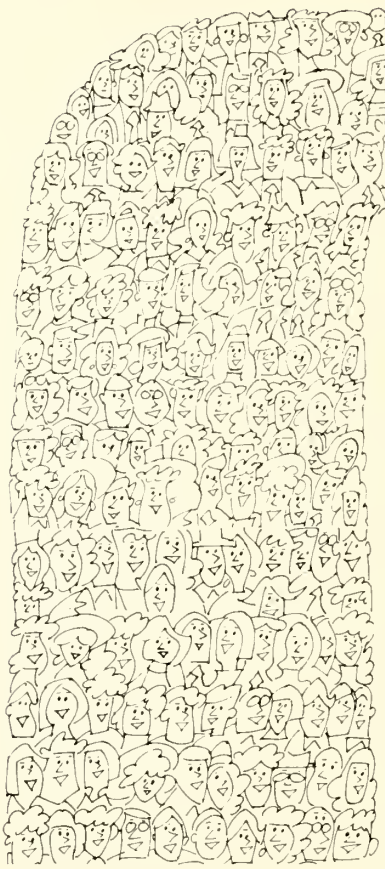
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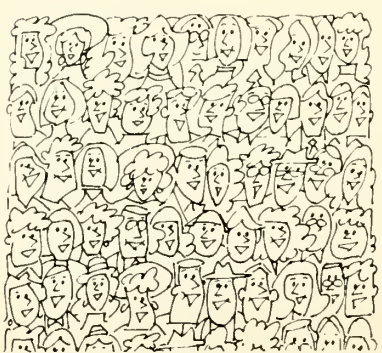
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Book Review

HEALTHY PREGNANCY THE YOGA WAY by Judi Thompson. Foreword by James C. Baker, M.D. Garden City: Doubleday, 1977

This is a sensible presentation of what yoga offers to the pregnant woman during the prenatal, intra-, and post partum periods. Since many of the concepts and technics of childbirth preparation and yoga are complementary, if not generally similar, yoga provides a method of maintaining relaxation and body control which can be utilized with safety and beneficial effect by the pregnant and post-partum patient. It is not written by a militant crusader, but rather is the result of the rational reflection and conscientious research of a dedicated teacher of yoga.

The presentation of material is well organized. The concepts and instructions are clearly expressed with admirable sound advice to the reader which includes seeking her physician's views and support, using common sense, and observing the necessary adherence to accepted nutritional needs in pregnancy. The photographic depictions of the various yoga positions and postures are delightfully posed by a happy, serene, and elfish young lady. The author demonstrates those postures which are appropriate for the post-partum period.

Two flaws, which are so minor that mention may be "picky," are the misuse of the word prone in place of supine, and a somewhat irrelevant pitch for a special ovulation timing technic as a natural family planning method. A cynic might be tempted to ask whether the author conceived her four children before this method became available, or in spite of its employment.

For those who have the time and inclination, this readable paperback will add an effective dimension to their physical and emotional well-being through pregnancy as well as a soft-sell challenge to establish physical fitness throughout life.

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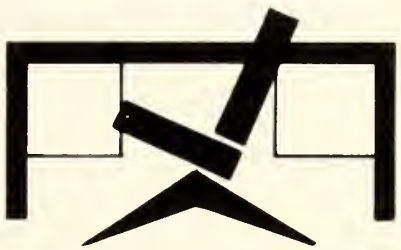
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Rhode Island Medical Journal

December, 1977 Vol. 60, No. 12

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JAMES W. MCDOWELL, M. D. KENNEY CLINIC DAY CHAIRMAN

8:30-9:00 Registration & Coffee

MORNING SESSION

Eugene Healey, M. D.
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PRESENTATION OF PAPERS

9:00	Opening Remarks—Mr. Francis Dietz
9:10	Opening Remarks—President of Staff Dr. Richard Bertini
9:15	Legionnaire's Disease—Dr. Fredy Roland
9:35	The Utility of Ultrasound In A Community Hospital—Dr. Robert Ryan
9:55	Herpes Zoster Opthalmicus—Dr. Robert Curran
10:10	Influence of Diet on Platelets—Dr. Angeline Carvalho
10:30	COFFEE BREAK
10:45	Survival and Limb Salvage of Patients with Infected Arterial Prosthesis—Drs. James & John Yashar
11:05	Malignant Hyperthermia—Dr. Joseph Akers
11:25	Causes & Evaluation of Shoulder & Arm Pain—Dr. Carl Granger

NOON LUNCH

AFTERNOON SESSION

James W. McDowell, M. D Chairman

ALCOHOLISM IN A COMMUNITY HOSPITAL SETTING.

1:30-2:30	Office Management of the Alcoholic. Dr. LeClair Bissell, Chief, Smithers Alcoholism Treatment and Training Center, Roosevelt Hospital New York, New York.
2:20-2:45	COFFEE BREAK
2:45-4:00	PANEL DISCUSSION Dr. Leclair Bissell, Dr. Roswell Johnson, Ms. Barbara McCrady, Dr. Edmund Billings, Dr. Bashir Ahmad

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Rhode Island Medical Journal

DECEMBER, 1977 VOLUME 60, No. 12

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CONTINUING MEDICAL EDUCATION CALENDAR

JANUARY

13 "LESSONS I HAVE LEARNED FROM DIFFICULT CASES," Judah Folkman, M.D.; Julia Dyckman Andrus, Professor of Pediatric Surgery, Harvard Medical School; Surgeon-in-Chief, Children's Hospital Medical Center, Boston, Massachusetts. George Auditorium, Rhode Island Hospital. 10:30 a.m. to 12:00 noon.

14 "THE DIAGNOSIS AND MANAGEMENT OF HEMOLYTIC ANEMIAS," H. Franklin Bunn, M.D.; Associate Professor of Medicine, Harvard Medical School; Director, Hematology Division, Department of Medicine, Peter Bent Brigham Hospital, Boston, Massachusetts. George Auditorium, Rhode Island Hospital. 10:00 a.m.

18 SEMINAR ENTITLED: "CARE AND NEEDS OF THE TERMINALLY ILL." The needs of the terminally ill person and family as well as the dilemmas and needs of the care givers will be covered in lectures and discussion. The event is sponsored by the Interfaith Health Care Ministries; Program in Health Services Administration, Providence College; Brown University Program in Medicine; Thanatology Associates; and Hospice Care of Rhode Island, Inc. Cranston-Hilton Inn, 1150 Narragansett Blvd., Cranston, R.I., 8:30 a.m. to 3:30 p.m. Registration fee $15.00 (students, $7.50). Lunch and coffee are included in the fee. For further information, call David Ames, 751-8054.

20 "SOME GYNECOLOGIC PROBLEMS OF THE ADOLESCENT," Janet W. McArthur, M.D., Harvard Medical School, Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12 noon.

24 "IMMUNODEFICIENCY STATES IN THE MEDICAL AND SURGICAL PATIENT," Charles A. Janeway, M.D., Professor of Pediatrics, Harvard Medical School, and Physician in Chief, Children's Hospital Medical Center, Boston MA. (1946-1974). "Fleet Room," Newport Naval Officers' Club, Newport, RI. Dinner at 6:30-7:30 p.m., Seminar at 7:30-9:30 p.m. Those wishing to attend who are not members of the Newport County Medical Society are welcome and should call Mrs. Elizabeth Cranston, 1-401-846-6400, Ext. 445 for dinner reservations. There is a charge of $7.00 per person for non-members.

25 45th KENNEY CLINIC DAY. A.M. Session, Medical Papers presented by the Staff; P.M. Session, Papers on Alcoholism. Luncheon. Nurses' Auditorium, Pawtucket Memorial Hospital, 9:30 a.m. to 2:30 p.m.

FEBRUARY

10 "METABOLIC DISORDERS OF THE LIVER," Mervin Silverberg, M.D., Cornell University Medical College. Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12:00 noon.

25 "INFECTIOUS DISEASES," Louis Weinstein, M.D., Professor of Medicine, Harvard Medical School; Physician, Peter Bent Brigham Hospital. Seminar 10 a.m. to 12 noon. Luncheon 12 noon to 1 p.m. Clarke Cooke House Restaurant, Newport. Those wishing to attend this Newport Hospital Postgraduate Medical Seminar who are not members of the Newport County Medical Society should call Mrs. Elizabeth Cranston, 1-401-846-6400, Ext. 445 for luncheon reservations. There is a charge of $7.00 per person for non-members.

MARCH

29 SEMINAR ENTITLED: "NONINVASIVE EVALUATION OF THE PATIENT WITH ISCHEMIC HEART DISEASE." Topics will include: "Survey of Noninvasive Diagnostic Techniques in Cardiology," Arthur Sasahara, M.D., Chief of Medicine, U.S. Veterans Administration Hospital, Roxbury, Massachusetts; Professor, Harvard Medical School; "Myocardial Infarct Imaging," Leonard B. Holman, M.D., Chief of Clinical Nuclear Medicine, Peter Bent Brigham Hospital, Boston, Massachusetts; Associate Professor of Radiology, Harvard Medical School; Established Investigator, American Heart Association; "Evaluation of Left Ventricular Function and Stress Testing with Radionuclides by Gated Images," Gerald Pohost, M.D., Assistant Professor in Medicine at the Massachusetts General Hospital, Boston, Massachusetts; "Evaluation of Left Ventricular Function by Single Pass Studies," Donald Tow, M.D., Chief, Nuclear Medicine Service, U.S. Veterans Administration Hospital, West Roxbury, Massachusetts; "Stress Testing with ECG Monitoring," Richard A. Carleton, M.D., Chief, Division of Cardiology, The Memorial Hospital, Pawtucket, R.I.; Professor of Medidine, Brown University, Providence, R.I.; "Physical Concepts of Ultrasound in Diagnostic Medicine," Paul H. Brown, Ph.D., Instructor, Radiation Physics, Brown University, R.I.; Physicist-in-Charge, U.S. Veterans Administration Hospital, Providence, R.I.; "Echocardiography in Evaluation of Left Ventricular Function," John O. Pastore, M.D., Director, Noninvasive Cardiac Laboratory, St. Elzabeth's Hospital, Boston, Massachusetts; Assistant Professor of Medicine, Tufts University, Boston, Massachusetts. Marriott Inn, Providence, R.I., 9:00 a.m. to 5:00 p.m. For further information, contact the R.I. Affiliate of the American Heart Association, attention Mr. Dave Chatel, 728-5300.

17 "RECENT ADVANCES IN PEDIATRICS," Sydney S. Gellis, M.D., Tufts University School of Medicine. Pediatric Teaching Rounds, Kay Auditorium, Roger Williams General Hospital. 10:30 a.m. to 12:00 noon.

"THE PROPER USE OF PSYCHIATRIC CONSULTATION AT A COMMUNITY HOSPITAL," Shervert H. Frazier, M.D., Professor of Psychiatry, Harvard Medical School; Psychiatrist-in-Chief, McLean Hospital, Belmont, Massachusetts. 10 a.m. to 12 noon. AV Room, Newport Hospital.

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A Message From The Dean

HUMANISM AND MEDICINE

The core of biomedical information and technological skills is constantly expanding. Dealing with the awesome mass of this material, which must somehow be compressed into the four years of formal medical school education, makes us occasionally lose sight of yet other requirments in the training of the competent practicing physician. Educators tell us that student time invested in the gathering of impressive quantities of required data cannot be simultaneously devoted to the development of analytic, perceptive thinking. In our zeal to ensure that the present educational content of the school of medicine is both comprehensive and contemporary, we run a grave danger. We are well aware that the preparation for medicine requires the development of a disciplined sense of inquiry. But we must not ignore the necessity for encouraging a compassionate concern in our students for the perplexed and distressed patients, and a sophisticated understanding of the social and ecological forces which influence the health of these same patients. It is a flaw in our thinking which makes us assume that all medical problems must be explainable ultimately by some biophysical or biochemical model. Watts has once said that the mystery of life is not a mathematical problem to be solved, but a reality to be experienced.

It requires a conscious effort to make certain that the medical curriculum at Brown University does not become a great burden consisting only of exercises in memorization. It is important that we somehow take steps to enhance the humanistic qualities of medical education at Brown. During the last few years specifically designed courses have been introduced including medical jurisprudence, death and dying, medical ethics, history of medicine, and human sexuality. Additional educational programs on topics such as the care of the terminally ill patient have been jointly designed by and taught with concerned members of the Rhode Island clergy. (Conversely, the medical school faculty presents a yearly series of summer seminars and tours to acquaint the practicing Rhode Island clergy with the nature and logistics of hospital medicine.) These steps in the direction of humanizing the training of our physicians were regarded as only a partial fulfillment of our goals in this direction. Funds were needed to explore further ways of enriching the medical curriculum.

Last year, the Brown University-Pembroke College Class of 1951 sought a meaningful area for their twenty-fifth anniversary gift. After much discussion and debate they decided to assemble a generous fund which would encourage the premise that medical education at Brown University shall be conducted in a scholarly climate, and that it shall incorporate a comprehensive humanities program which would acquaint our future physicians with the ethical, social, economic and esthetic forces which define the nature and quality of life.

The Brown medical school is now a fully accredited enterprise. Our graduates are successfully completing graduate medical education programs in over twenty states, and we are no longer listed as an innocent, new or emerging school. The conventional components of medical education at Brown, for the most part, are in place and seem to be functioning rather well. Prompted in part by the generosity of the Class of 1951 and in part by the wishes of the University faculty, the Brown medical school must now devise a flexible curriculum which prepares our students to practice medicine in social

climates which may be notably changed from the present, without sacrificing the elements necessary to produce a competent doctor. In short, we must assume at Brown the responsibility for reviewing constantly our medical curriculum and guarding against an educational design which equates medicine only with technical skills.

A faculty committee (with representation from our community physicians) is about to be convened to find ways in which the humanities, arts, languages and social sciences can better interact with our medical curriculum. In preliminary conversations, the following thoughts have been expressed:

1. We must encourage in our students those skills needed in imaginative problem solving, rather than merely develop aptitudes for choosing a response from a set of preconceived answers.
2. We must encourage in our students a sensitivity to language and an appreciation of the fundamental importance of communication in medical diagnosis and in medical treatment. Our purpose here will not be to add charm or diversity to our physicians' conversations, but rather to develop accurate and sensitive communication during the intimate transaction which characterizes the physician-patient relationship.
3. Most important, we must open the conventional medical school subjects to esthetic and humanistic points of view. Initially, this might be viewed as an irreconcilable coexistence of disciplines. Done well, however, it should lead the young physician toward gaining a much broader perspective on life and those qualities within life worthy of encouragement.

Our profession, historically, has produced great artists from amongst its ranks. It is not unusual to find unique musical, graphic, artistic or literary talent amongst the ranks of physicians. Those of us in the Providence region who have attended the periodic chamber music concerts by the Brown medical students would support this belief. I therefore do not think that the medical students at Brown (or any other medical school) would require coercion to enter a curriculum enriched by the humanities.

How, and in what manner, humanism will be part of formal medical education at Brown remains the responsibility of this faculty committee. We recognize that we have a long way to go in order to create that ambience for which we all strive: the educational climate designed to yield a skilled physician who is competent, broadly educated, capable of growth, awed by the miraculous and above all, humane.

Stanley M. Aronson, M.D.
Dean of Medicine
Brown University

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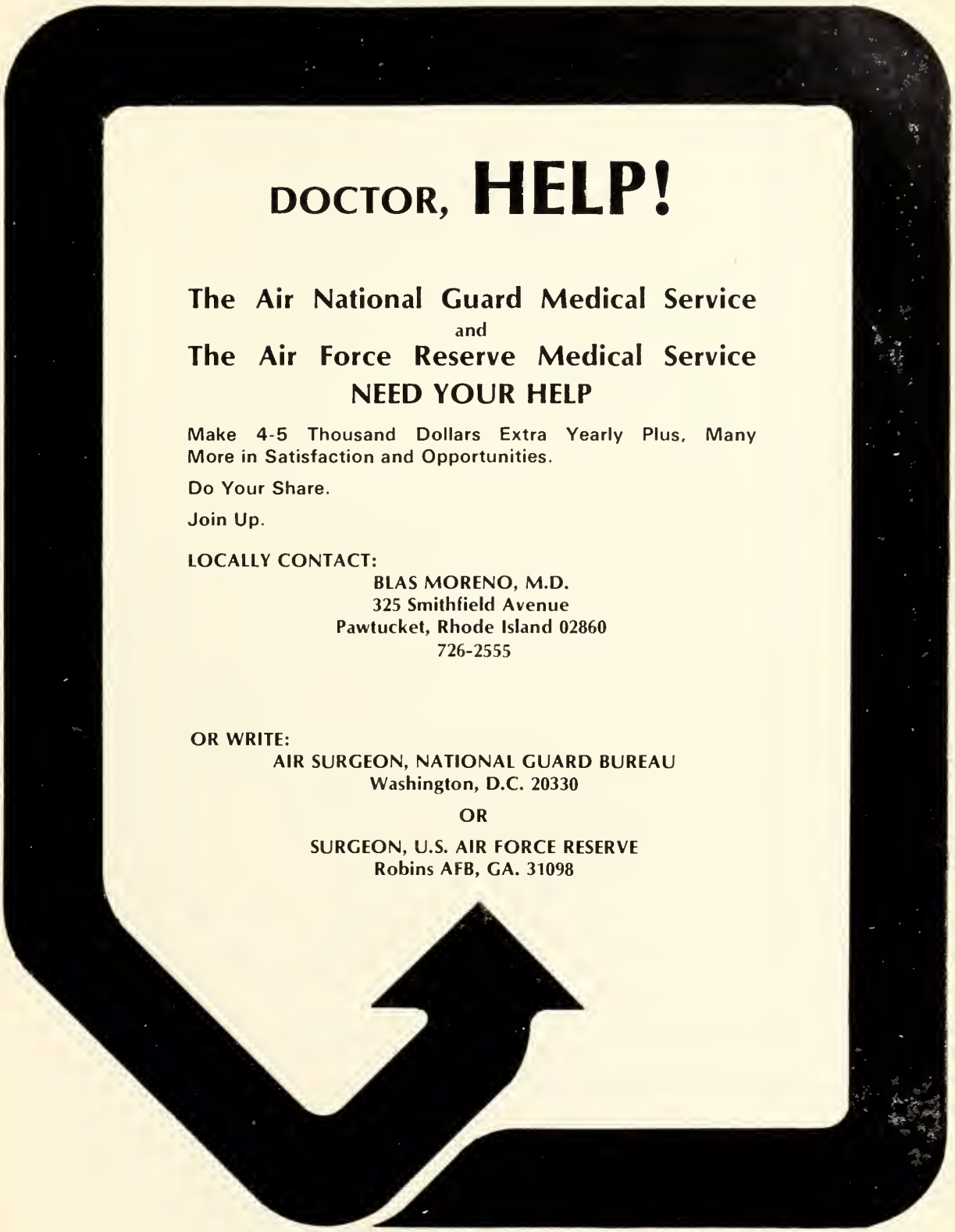
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Rehabilitation Of The Knee Following Surgery Or Injury

Restoration Of Function Requires Careful Postoperative Or Post-traumatic Management

By A. A. Savastano, M.D.

The details of post-operative care following knee surgery are dependent upon the condition for which the surgery is done, the age of the patient, and the preferences of the surgeon. This paper will be limited to a discussion of the therapeutic measures necessary to restore joint motion and muscle strength to an extremity and some of the more common complications following knee injury or surgery.

After surgery to an injured knee it is of the utmost importance that measures be taken to restore function in the extremity to a status as close as possible to normal. This can best be accomplished by quadriceps excerises, which should have the following characterisics: 1) general as well as specific, 2) regulated with regard to dosage, 3) rhythmic in character, 4) progressive, and 5) variable in form.

GENERAL OR SPECIFIC EXERCISES

In relation to recovery of the injured knee joint, specific exercises are directed to the redevelopment of the quadriceps, concentrating especially on the vastus medialis. The vastus medialis is responsible for the last 15 degrees of extension of the knee. Rest in bed or restricted activity necessitated by injury result in deterioration of all the muscles of the locomotor system. Rehabilitation of patients from grave knee injuries, therefore, not only should include measures directed toward the development of the important quadriceps muscle, but also should be designed to maintain the volume, tone, and coordination of the musculature of the sound limb, trunk, thorax, neck, and upper extremities.

REGULATION WITH REGARD TO DOSAGE

Active exercises will defeat the purpose for which they are prescribed if more demands are made upon the recovering muscles than they are capable of meeting. The ill-effects of unreasonable demands upon the quadriceps are manifest in the damage to the knee joint which may result. Such demands usually take the form of excessive weight bearing in the early stages of recovery whether as organized weight bearing exercises or merely as standing or walking. Recovery of function will always in the long run be accelerated if weight

A. A. SAVASTANO, M.D., *Department Of Orthopedic Surgery, Rhode Island Hospital; and Clinical Professor of Orthopedic Surgery, Brown University Program in Medicine*

bearing is severly restricted until any effusion which has been present is diminishing and restricted exercises have produced a degree of redevelopment adequate to the protection of the joint. The amount of weight to be raised at any single extension of the joint during the first week of resistant exercises is determined by trial after the initial session. This is accomplished by beginning with a small weight and raising it ten times, then gradually increasing the load, and raising each increased load ten times until the maximum weight the patient is capable of raising ten times is determined. No weight greater than this maximum with 10 repetitions of raising it is allowed during the first week, although up to a total of 100 repetitions progressing to this maximum may be allowed at a daily session. At the end of the first and each ensuing week an attempt is made to increase the maximum weight with 10 repetitions of weight raising for each weight.

RHYTHMIC CHARACTER

Each contraction must be followed by a period of complete relaxation of sufficient duration to permit the tissues to receive an adequate supply of fresh blood in order that the fatigue producing waste products of contraction can be carried away.

PROGRESSION

Progression is the secret of successful rehabilitation. Faradism may be used to initiate contraction in an inhibited muscle but should be replaced by active exercise immediately after voluntary control has been regained. Thereafter, the muscle must be trained to contract against gradually increasing resistance until development approaching the normal has been reached.

VARIABLE IN FORM

A single form of quadriceps exercises rapidly becomes monotonous and cannot be performed with enthusiasm over prolonged periods of time. The exercises prescribed are intended merely to stress the importance of the simple basic types during the recovery period. There are different types of excercises which can be used -- the most popular of which are the following.

1) **Straight leg raising.** This is an exercise of limited application because the amount of work performed is small and a few degrees of flexion of the knee joint intentional or unintentional may sacrifice much of the possible benefit. It has, however, the important advantage of the patient being required daily to raise his own leg from the bed and of his not being asked to learn anything strange and new at a time when neuromuscular coordination is poor. It has an added advantage not common to other forms of quadriceps exercises in that it can be assisted.

2) **Rhythmic quadriceps drill or quadriceps setting.** This exercise is of utmost value and consists of three phases: contraction, contraction sustained, and rest. The surgeon should not merely prescribe the exercise; he should demonstrate it with his own leg and ask the patient to perform the exercise on the sound limb. Only when the simple technique has been mastered should practice begin with the wasted muscle.

3) **Resistive exercises.** Resistive exercises to be used in the later stages of recovery are of great advantage. The design of apparatus for resistive quadriceps exercises should be such that the heaviest load is imposed on the muscle as the joint approaches full extension. Unfortunately, the simple weight apparatus in current use does not fulfill this requirement but, in fact, does exactly the reverse. DeLorme's method of using an iron shoe of ingenious design fitted with a bar to which is attached iron plates graded from one to twenty-five pounds differs essentially from loaded straight leg raising utilizing resistance throughout 90 degrees of motion in the joint.

POSTOPERATIVE COMPLICATIONS

In spite of good planning and excellent execution of surgery, complications nevertheless occur in a limited number of cases. Among the most common postoperative complications are the following: 1) pain, 2) local hematoma, 3) hemarthrosis, 4) persistent effusion, 5) sepis, 6) neuroma of the infrapatellar branch of the saphenous nerve or anesthesia in the distribution of the nerve, 7) thrombophlebitis or phlebothrombosis, 8) instability, and 9) stiffness.

1) **Pain.** Postoperative pain is not a prominent feature of meniscus operations except for the first two days or so. Persistent severe pain is usually due to some local cause

and warrants investigation. Slight reactionary swelling of the limb may follow the ischemia caused by the tourniquet or result from the minor degree of constriction which the use of a firmly applied compression bandage entails. This swelling may be controlled by raising the foot on the bed on blocks. If the swelling does not subside and is accompanied by pain in the knee, the bandage is probably too tight. It should be split over the posterior aspect of the limb, and additional bandage should be applied.

2) **Local Hematoma.** Occasionally the patient complains of pain in the region of the wound shortly after operation. Examination reveals local bulging of the incision, and the swelling may be pulsating. This may be due to the presence of a fluid hematoma between the skin and the capsule or between the capsule and the synovial membrane and is the result of failure to recognize and ligate sizeable vessels located in the skin, capsule, or extra-synovial fat. No treatment is necessary if the hematoma is minor, but, if the swelling is large and painful, the hematoma should be aspirated or evacuted through an incision under strict aseptic precautions followed by immediate application of elastic compression.

3) **Hemarthrosis.** Active bleeding into the joint cavity is usually the result of failure to seek out and ligate large vessels during the course of operation. Often, large vessels pierce the infrapatellar fat pad. These vessels can be seen readily if one takes the time to investigate the area. They should be ligated or cauterized. A common source of bleeding is division of the inferior lateral genicular artery when the lateral meniscus is removed. Blood in the joint cavity is an irritant to the synovial membrane. Failure of removal through the normal channels, principally the lymphatics, results in thickening of the synovial membrane, organization of the blood components, and eventually formation of adhesions. Massive hemorrhages cause increased intra-articular pressure, which in turn collapses the lymphatic channels and interferes with the normal process of removing the blood cells from the joint cavity. It is imperative therefore that hemarthrosis be recognized early and that the joint be decompressed by repeated aspirations. This should be followed by the application of a tight elastic compression bandage, complete bedrest, and the application of icebags. Hemarthrosis may also result from inadequate elastic compression or too early removal of the bandage for movement of the joint. Hemarthrosis may in some cases pass unnoticed, but in others there is severe pain, swelling, and increase of local temperature. The presence of local symptoms and signs in association with a systemic reaction may make differentiation from septic arthritis somewhat difficult. If any doubt exists as to the cause of the complication, investigation must be instituted immediately; otherwise, infective arthritis may be missed in the early stages. The joint should be aspirated and a firm compression bandage applied immediately while bacteriological studies are in progress.

4) **Persistent Effusion.** Persistent effusion may be due to the following: a) trauma at operation, b) recent injuries, c) overexercise, d) quadriceps insufficiency, e) traumatic arthritis, and f) malingering.

a) **Trauma at operation.** Difficult operations in which the medial ligament and capsule are subjected to prolonged stretching by forceful retraction with exposure of synovial membrane to prolonged pressure by retractors and artery forceps may result in a persistent synovitis in spite of conscientious postoperative care. A radiograph may show a patchy decalcification of the patella. If quadriceps weight bearing activity is restricted and quadriceps exercises are continued, the synovitis generally subsides. It will persist to some degree until radiographic appearance of the patella has returned to normal. Persistent synovitis is common following wide exposure of the joint through a long incision. Those who favor the median parapatellar incision maintain that incisions heal from side to side and not end to end. To the contrary the greater the length of the synovial membrane incised, the greater the synovial reaction. A single incision which permits both menisci to be examined is unjustifiable. In closing the synovial layer, the sutures should be buried so that no portion of the stitch or knot projects into the joint on the inner aspect of the synovial membrane with the possible production of irritation and protracted effusion. Cutting of a window in the suprapatellar pouch at the termination of an operation with insertion of forceps into the connective tissue beneath the quadriceps for

the purpose of permitting postoperative effusion to escape into the soft tissue of the thigh is nothing short of a brutal assault on the knee joint mechanism. Fortunately the use of this prophylactic measure appears not to be spreading. Many years ago an Italian orthopedic paper recommended this procedure. I tried it in several cases, but was unable to confirm the advantages reported.

b) **Recent Injuries.** More effusion is sometimes noted in joints subjected to operation within a short period after the original trauma than in old cases which have locked on many occasions.

c) **Over Exercise.** The importance of a quadriceps drill is necessary, but it is recognized that it is also possible to overexercise producing possible persistent effusion.

d) **Quadriceps Insufficiency.** Patients in whom there is gross quadriceps wasting and who have made little active effort to increase the volume and tone of their muscles often have recurrent effusion with excessive weight bearing activity. These effusions are the result of quadriceps insufficiency and incomplete control of the joint on walking with resulting trauma and effusion. Ambulatory activity must be restricted in these cases until quadriceps development reaches a degree sufficient to protect the joint from the normal strains of weight bearing.

e) **Traumatic Arthritis.** Patients who give a history of internal derangement of many years' duration with established traumatic arthritic changes present in the joint frequently suffer from persistent effusion. In these cases gradual improvement is to be expected with curtailment of weight bearing until the quadriceps is redeveloped.

f) **Malingering.** Effusion of unexplained origin has been produced by methods such as patellar tapping.

5) **Sepsis.** This disaster, which may be the result of faulty aseptic technique, may also be an unfortunate sequel of some untreated foci of infection elsewhere. Symptoms of pain and swelling of the joint accompanied by a spiking temperature and a general constitutional ill feeling raise the suspicion of sepsis. In these cases the joint should be aspirated and an attempt made to classify the offending organisms concerned by culture and sensitivity tests. Once the aspiration is completed and the results of the bacteriological studies are available, appropriate antibiotics should be injected into the synovial cavity together with the systemic administration of antibiotics. These should be continued until a good response is evident. No effort should be spared which might avoid the necessity for open drainage. Some years ago Buchman recommended radical synovectomy followed by tight closure of the joint in cases of persistent postoperative sepsis of the knee with reported good results.

6) **Neuroma of the Infrapatellar Branch of the Saphenous Nerve or Anesthesia in the Distribution of this Nerve.** The saphenous nerve pierces the deep fascia on the medial side of the knee between the tendons of the sartorius and gracilis muscles. Before penetrating the deep fascia it gives off the infrapatellar branch which passes forward about a finger's breadth below the head of the tibia to form the pattellar plexus in association with the branches of the lateral, medial, and intermediate cutaneous nerves. In spite of the very large number of menisci removed and the use of incisions which of necessity may divide the nerve, neuroma of the infrapatellar branch of the saphenous nerve is a relatively uncommon sequel of operation. All medial joint incisions divide branches of the infrapatellar nerve and may divide the main nerve. The neuroma which may possibly result causes symptoms because the scar to which it is attached is situated in an area of skin which moves with every step and is subject to constant friction from the overlying clothing. If a diagnosis of neuroma is established, the scar should be excised, the neuroma isolated, and the nerve raised in a proximal direction and divided with a sharp scalpel. This measure insures at least that a further neuroma is not adherent to the subcutaneous incision. A small zone of anesthesia frequently arises following a medical incision The size of the area depends on whether a branch or branches of the main nerve have been divided. The infrapatellar nerve varies greatly in size; consequently, when the nerve is large, a correspondingly greater area may be affected. I make every effort in knee surgery to isolate as many of the branches of this nerve as possible with the result that I encounter very few cases of either neuroma or anesthesia. If some of the larger nerves are cut, the zone of anesthesia

may be permanent rather than temporary.

7) **Phlebothrombosis or Thrombophlebitis.** The incidence of these disorders following meniscectomy is exceedingly rare. Early active exercise of the affected limb after operation is a major prophylactic factor and is responsible for the infrequency of their occurrence. They generally occur in patients over 50 years of age. They respond well to anticoagulants, hot packs, and leg elevation.

8) **Instability.** Although it occurs but rarely, the collateral ligaments may be inadvertently severed in removing either the internal or external meniscus. If the accident is discovered early, it becomes a simple matter to repair the severed ligament. If, however, the accident is discovered late, repair becomes a much more formidable procedure.

CONCLUSION

In uncomplicated cases of knee arthrotomy postoperative recovery is rapid, particularly in the athlete who is motivated to return to active athletic competition as rapidly as possible. Athletic participation is permitted as soon as the range of motion is normal and the strength of the operated leg is equal to that of the good leg. In some cases recovery may be governed by litigation, duration of symptoms prior to surgery age of the patient, nature of athletic competition, and postoperative complications.

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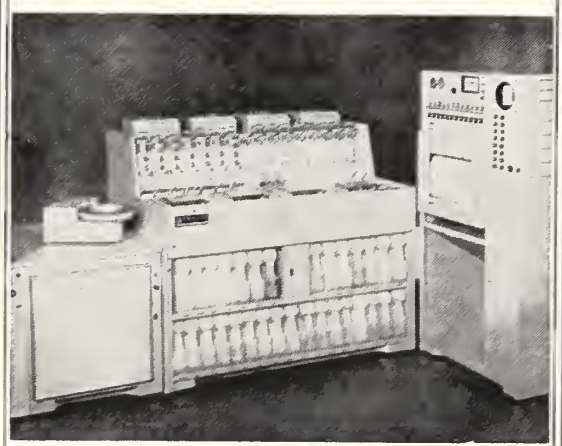
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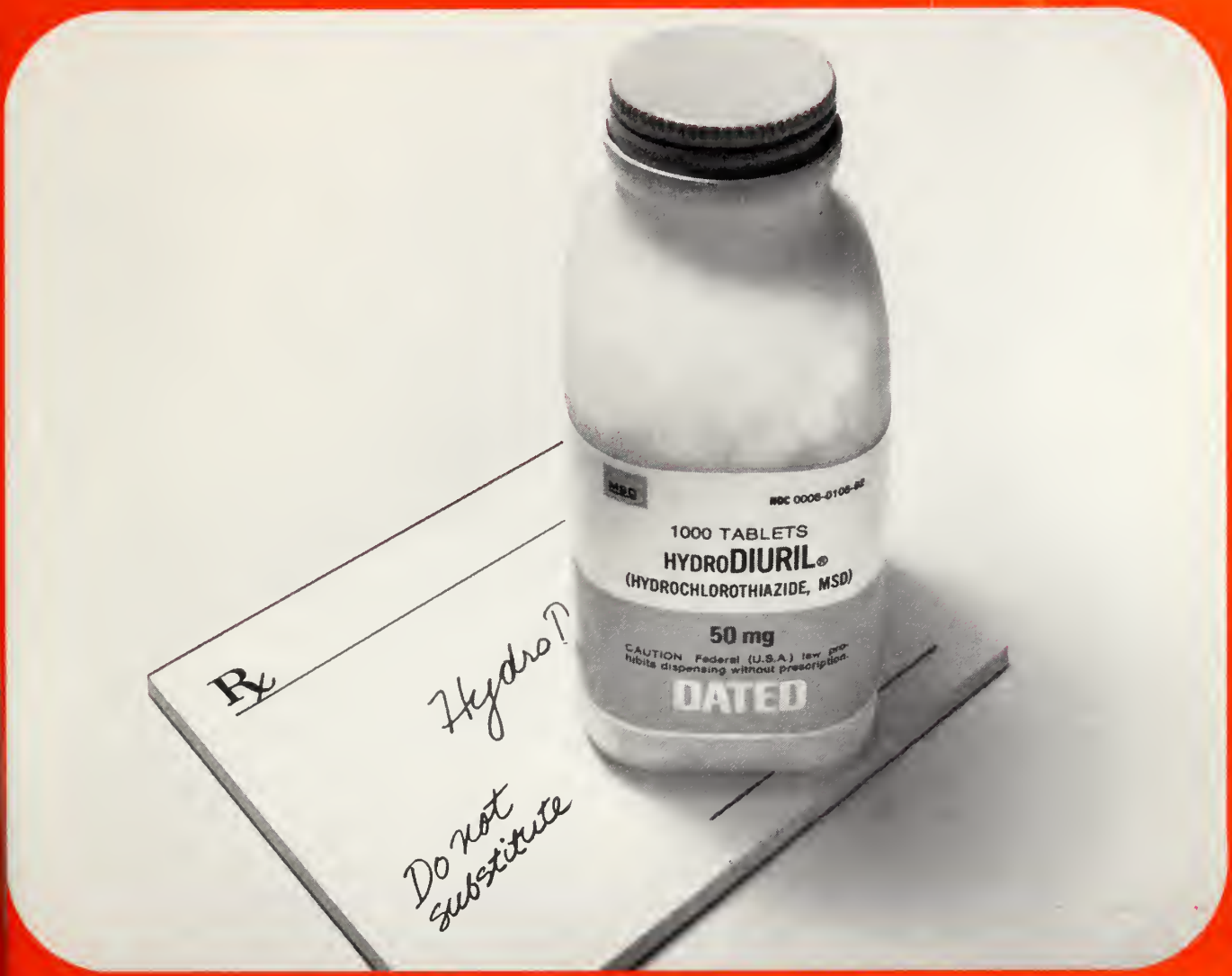
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Hyperuricemia may occur or frank gout may be precipitated in certain patients. Insulin requirements in diabetic patients may be increased, decreased, or unchanged; latent diabetes mellitus may become manifest. Thiazides may increase responsiveness to tubocurarine. Antihypertensive effects of the drug may be enhanced in postsympathectomy patients. May decrease arterial responsiveness to norepinephrine; this diminution is not sufficient to preclude effectiveness of the pressor agent for therapeutic use. If progressive renal im-

for experience—



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pairment becomes evident, consider withholding or discontinuing diuretic therapy. Thiazides may decrease serum PBI levels without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. Pathologic changes in the parathyroid gland with hypercalcemia and hypophosphatemia have been observed in a few patients on prolonged therapy; thiazides should be discontinued before testing or parathyroid function.

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Hematologic—Leukopenia; agranulocytosis; thrombocytopenia; aplastic anemia.

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Dietary Goals For The United States

Statement Of The American Medical Association To The Select Committee On Nutrition And Human Needs, United States Senate

The American Medical Association is pleased to present its comments on the publication entitled "Dietary Goals for the United States" as prepared by the staff of the Senate Select Committee on Nutrition and Human Needs.

At the outset we wish to commend the efforts seeking to achieve an increased level of health among our citizens. Diet of an individual can vitally affect his health status. However, it must be recognized that diets must not be standardized nor be inflexible for all persons but must reflect individual needs.

We believe that it would be inappropriate at this time to adopt the proposed national dietary goals as set forth in the Report on Dietary Goals for the United States. The evidence for assuming that benefits to be derived from the adoption of such universal dietary goals as set forth in the Report is not conclusive and there is a potential for harmful effects from a radical long term dietary change as would occur through adoption of the proposed national goals. A discussion of our concerns with the Report follows:

BACKGROUND

The Report on Dietary Goals consists of several introductory statements as to the desirability of establishing six national "dietary goals" as part of a national health policy; an explanation of the goals and their rationale; and five recommendations to Congress to encourage achievement of the dietary goals.

Submitted on April 18, 1977

The purpose of the Report, as expressed in the Foreword of the Report, is (1) to "point out that the eating patterns of this country represent as critical a public health concern as any now before us"; (2) to provide practical guides to the individual consumer as well as to set national dietary goals "to reduce health costs and maximize the quality of life"; and (3) "to serve as a catalyst for government and industry action to facilitate the achievement of the recommended goals."

In addition, the Foreword states that: "Action is needed to determine how changes can be made regarding the content of nutritional information provided to the public; the kinds of foods produced; how foods are processed and advertised; and the selection of foods offered by eating establishments. Our national health depends on how well and how quickly government and industry respond."

Statement of Dietary Goals. The Report sets forth six dietary goals for the United States. These goals are as follows:

(1) Increase carbohydrate consumption to account for 55% to 60% of energy (caloric) intake.

(2) Reduce over-all fat consumption from approximately 40% to 30% of energy intake.

(3) Reduce saturated fat consumption to account for about 10% of total energy intake; and balance that with poly-unsaturated and mono-unsaturated fats, which should account for about 10% of energy intake each.

(4) Reduce cholesterol consumption to about 300 mg/day.
(5) Reduce sugar consumption by about 40% to account for about 15% total energy intake.
(6) Reduce salt consumption by 50% to 85% to approximately 3 gm/day.

Recommendations For Government Action. The Report also presents five recommendations for government action to encourage the achievement of the foregoing dietary goals. The recommendations are:

(1) That Congress provide funds for a public education program in nutrition based upon the above or similar goals and including nutrition education in the classrooms, in the federally funded food assistance programs, for school food service workers, and by the Extension Service of the Department of Agriculture.
(2) That Congress require food labeling for all foods containing the following information: per cent and types of fats, per cent sugar, milligrams of cholesterol, milligrams of salt, caloric content, a complete listing of food additives for all foods, and the nutrition labelling which is currently voluntary.
(3) That Congress provide funds for the conduct of studies, and pilot projects that would develop new techniques in food processing and institutional and home meal preparation aimed at reducing "risk factors" in the diet.
(4) That Congress increase funds for human nutrition research and and that Congress establish a Committee for the co-ordination of human nutrition research undertaken by the Departments of Agriculture and HEW.
(5) That the Departments of Agriculture and HEW form a joint committee to periodically consider the "implications of nutritional health concerns on agricultural policy."

COMMENTS

The AMA is concerned about the assumptions made in the report relating to the benefits assertedly to be derived by adoption of a major change in our national dietary practices along the lines stated in the study. We discuss these concerns below.

In addition, we believe that the dietary goals as set forth in this Report should not be adopted at this time nor should the recommendations to implement these goals be adopted. For reasons which we point out, we believe that insufficient evidence exists at this time to support the need for or the benefit from major changes in the national diet as proposed.

General. The Report's premise is found in an introductory statement to the report:

> ". . . our diets have changed radically within the last 50 years, with great and often very harmful effects on our health. These dietary changes represent as great a threat to public health as smoking. Too much fat, too much sugar or salt, can be and are linked directly to heart disease, cancer, obesity, and stroke, among other killer diseases. In all, six of the ten leading causes of death in the United States have been linked to our diet."

The Report suggests that the incidence of heart disease, cancer, hypertension, diabetes, obesity and tooth decay could be reduced by making qualitative and quantitative changes in "the American diet." The goals are laudable; however, the American Medical Association believes that there are insufficient data to recommend such changes in the diet on a nationwide scale. This is not to imply that certain dietary practices of many Americans should not be improved.

For example, evidence that links the American diet with the American death rate from ischemic heart disease is suggestive, fragmentary, and even conflicting. The epidemiological data showing associations between diet and cancer of the colon and breast cancer are very tenuous. While epidemiological observations suggest a relation between salt ingestion and hypertension, they fail to support the hypothesis that salt consumption is a major factor in causing hypertension in persons in the United States. Diabetes is a multifactorial disease; its precise etiology has not been established and there are no primary studies that establish any specific dietary factors as diabetogenic. Moreover, patients with diabetes require diets tailored to the individual.

Heart Disease. One of the diseases that the Report suggests could be affected through adoption of the dietary goals is heart

disease. The strongest evidence for an association between diet and any one of the ten leading causes of death in the United States is that of diet and coronary heart disease. However, in 1969, Dr. Theodore Cooper, Director of the National Heart Institute, National Institutes of Health, stated: "Evidence which is suggestive, fragmentary, and even conflicting links the American death rate from ischemic heart disease."[2] This statement is still valid in 1977.

Coronary disease is a multifactorial condition. Many risk factors have been identified, but these are not all of equivalent importance in population groups or in individual patients, and the evidence for harm done by their presence ranges from strong to weak or only suggestive. Generally those considered to be of greatest importance have been age, sex, hypertension, hyperlipemia (especially an elevated serum cholesterol level), diabetes, and cigarette smoking.[3]

Dietary studies on the incidence of heart disease generally have been limited to attempts at reduction of serum cholesterol levels and have been successful in lowering the serum value 10% to 20%. Those studies published up to 1969, which form the basis for dietary advice issued by various health groups, were reviewed by Cornfield and Mitchell,[4] who pointed out the difficulty in evaluating the data because of variability in design of the studies and considerable range in the magnitude of results. They also indicated that principles must be observed in future studies if more definitive knowledge is to be obtained on the question of whether lowering serum lipid levels will reduce the risk of coronary heart disease.

In a Report of the Diet-Heart Review Panel of the National Heart Institute,[2] the Panel examined all the evidence on the proposition that the incidence of coronary heart disease might be reduced through dietary measures. The Panel stated that the evidence was "most suggestive but not convincing." It was the Panel's opinion that the important points at issue remain unproven. It is not proven that dietary modifications can prevent atherosclerotic heart disease in man. It is not known that the demonstration of such a proof could or would find general applicability in our society. Also,it is not known what constraints and responses would arise in the course of applying such knowledge in the population. Moreover, answers to these important questions in the Panel's view can only come from definitive field trials to test the scientific hypothesis that the relationship between serum cholesterol levels and coronary heart disease incidence is a causal relationship rather than an indirect association.

The Panel concluded, among other things:

(1) In the absence of conclusive proof on the Diet-Heart question any dietary advice to the American public will always lack authenticity and authority, will be conducive to half-measures and will meet opposition which cannot be effectively countered.

(2) . . . should the result (definitive field trials) indicate that a change in the national diet will be required, this would have considerable impact on the economy of the country; it was concluded that with appropriate planning, the food industry would be able to make the necessary adjustments.

(3) Unless definitive trials are instituted now, one of two equally undesirable situations will result; either, scientifically sound advice to the American public will be delayed and many lives that might be saved will be lost; or, the public will react with apathy to dietary advice based on inconclusive evidence and any beneficial results of such a program will not be identifiable.

A national study of primary prevention of coronary heart disease, the Multiple Risk Factor Intervention Trial, has been undertaken by the National Heart and Lung Institute.[3]

The American Medical Association concurs with the opinions and judgments expressed by the Panel and does not believe it is appropriate to recommend radical dietary measures to the population as a whole until completion and assessment of results of studies currently underway.

Cancer. Another disease category which would allegedly be influenced by adoption of the dietary goals as set out in the Report is cancer. The Report suggests a link between fat and cancer of the breast and colon and between consumption of fiber and the

existence of bowel cancer. While epidemiological data show a correlation between high fat intake and cancer of the colon, the case against high fat intake is weak because there are populations that have a high fat intake but little bowel cancer.[5] Any conclusion that diet is related to cancer of the colon and any specific tests of dietary hypotheses must first await demonstration of dietary differences between patients with colon cancer and persons free of the disease, i.e., case-control studies.[6]

Furthermore, high fat intake has not been identified as a risk factor in breast cancer.[7]

As to dietary fibers, there is no scientific consensus on the definition of dietary fibers or how to measure them. Fiber is a general term applied to several different food components that vary in their chemical and physical characteristics. It is not yet possible to define whether or not fiber deficiency or excess in the diet exists or can constitute a protective or noxious element in the diet.[8]

Hypertension. Another alleged benefit from adoption of the dietary goals is, in the view of the Report, a favorable change in the incidence of hypertension by setting a goal of consumption of salt at 3 grams daily.

Difficulties arise in attempting to recommend a suitable range for dietary salt because of the tremendous range of biological tolerance in normal human beings, the widely different levels of salt appetite, and the cultural significance which salt has in relation to food.[9]

The effects of salt consumption have been well stated by the Committee on Nutrition of the American Academy of Pediatrics[1] in the following:

> "Because of the prevalence of essential hypertension in adults, there is a major public health concern with its causes. . . . These factors include race, family history, stress, variations in endocrine and kidney function, and body habitus. Salt has also been cited as causing hypertension. There is no question that an increase in salt intake by most hypertensive patients will increase their blood pressure. The converse also is true. The question is whether salt intake induces hypertension and, in particular whether salt consumption by the general population in this country is a risk.
>
> ". . . epidemiological observations suggest a relation between salt ingestion and hypertension but fail to support the hypothesis that salt consumption is a **major** factor in causing hypertension in persons in the United States.
>
> "Approximately 20% of children in this country are at risk of developing hypertension as adults. The factors that will induce hypertension are genetic, which cannot be modified, and environmental, which can be modified. . . .
>
> "The role of salt intake as an environmental factor in the induction of hypertension has still to be defined. For 80% of the population in this country, present salt intake has not been demonstrated to be harmful, i.e., hypertension has not developed. . . .
>
> "Salt appetite for some is an important expression of personal preference in relation to diet; for others, salt-containing foods have important cultural values. Present evidence does not provide a firm basis for advising a change in the dietary salt intake for the general population. There is a reasonable possibility that a low salt intake begun early in life may protect, to some extent, persons at risk from developing hypertension."

Organizations such as the American Heart Association and the American National Red Cross, professional and allied professional health care personnel, pharmaceutical companies, and civic groups have been actively involved in mass screening programs to detect elevated blood pressure[10] and thus to bring about proper treatment.

Furthermore, most patients with hypertension can be effectively treated, their blood pressure lowered, and their risk of death and adverse effects reduced. Medical management for some patients may include sodium restriction or caloric restriction or both.

Therefore, we believe that the recommendation of the Report to set salt consumption as a national dietary goal is inappropriate.

Diabetes. Diabetes is another disease that the Report suggests would be affected by adoption of the dietary goals. Indirect studies of the relationship between diet and the development of primary diabetes mellitus

cannot provide a definitive answer but overeating has been implicated as a factor associated with a rising incidence of maturity-onset diabetes, especially when combined with under-activity and obesity. The few direct studies that have been done support the hypothesis.[11] It is likely that avoidance of overeating and obesity would prevent the appearance of adult-onset diabetes in genetically-prone individuals.

The primary emphasis in the dietary management of the individual diabetic patient is weight control through appropriate calorie reduction rather than the proportion of carbohydrates and fat in the diet as the Report suggests, Diets to control diabetes (or other conditions) must be tailored to meet individual needs rather than seeking a uniform diet for all.

Obesity. Obesity is another condition addressed by the Report. Obesity is a major public health problem in the United States. It has been associated with four different types of hazards to health — changes in various normal body functions, increased risk of developing certain diseases, detrimental effects of established diseases, and adverse psychological reactions.

Although the effect of weight reduction in the prevention of disease is not clearly known, there are many diseases in which significant, obvious benefits are attained with the loss of coexisting excess weight. Obesity aggravates cardiovascular disease and osteoarthritis and increases the liability to hypertension, atherosclerosis, hernia, and gallbladder disease.[12] Also susceptibility to diabetes mellitus may be enhanced by obesity combined with inactivity.

Therefore, the prevention or treatment of obesity would be more effective in modifying the course of diabetes, hypertension, and one of the risk factors of coronary heart disease than any other diet modifications aimed at reducing the incidence of specific diseases.

However, the main dietary determinant of obesity is total amount calories (energy) in the diet and not their source (i.e., whether or not the calories are provided by carbohydrates, fat or protein). In practice, the choice of food and the eating patterns of overweight individuals are as varied as those people who are of normal weight or who are underweight. Those suffering from obesity should seek individual medical advice and, where appropriate, follow a prescribed individual diet. Adoption of national dietary goals is not an answer to obesity and could prove detrimental if followed by individuals properly requiring medical supervision for their particular condition.

CONCLUSION

The evidence for benefits to be derived from the adoption of the dietary goals as set forth in this Report is insufficient and the potential for harm for the long term change in "the American diet" is unknown. Further, the genetic and cultural heterogeneity of the population in the country would, no doubt, resist a rigid policy with respect to dietary goals. While the goals set forth in this Report would appear to be laudable in many respects, the American Medical Association believes that at this time it would not be appropriate to adopt such dietary goals.

The dietary goals of the Report concerning modification in the amount and type of fat control and cholesterol and the restriction of salt intake to no more than 3 grams daily are comparable in many respects to therapeutic diets. Such diets must be formulated to meet the individual needs with appropriate medical dietary counselling on an individual basis. Strict adherence is required to obtain the desired results.

The American Medical Association does not consider it appropriate for the government to adopt national goals that specify such matters as the amount and proportions of total fat, type of fat, sugar, cholesterol, or salt content in the diets of the general public as these national goals advocate.

Rather, we believe that individual programs to prevent or to treat obesity through decreased caloric intake along with programs aimed at improving physical fitness would be the most effective means of improving the health of our American citizens.

As to the recommendations stated in the Report, we believe that they should not be adopted in implementation of the national goals. As stated, the recommendations would encourage the Federal government to undertake a massive, nationwide educational program to gain public acceptance and

incorporation of the dietary goals as personal goals. Furthermore, the recommendations carry with them the underlying potential for prohibiting the sale or for discouraging the agricultural production of certain food products which may not in the view of the government be supportive of the dietary goals.

In conclusion, we urge that the Report not be adopted.

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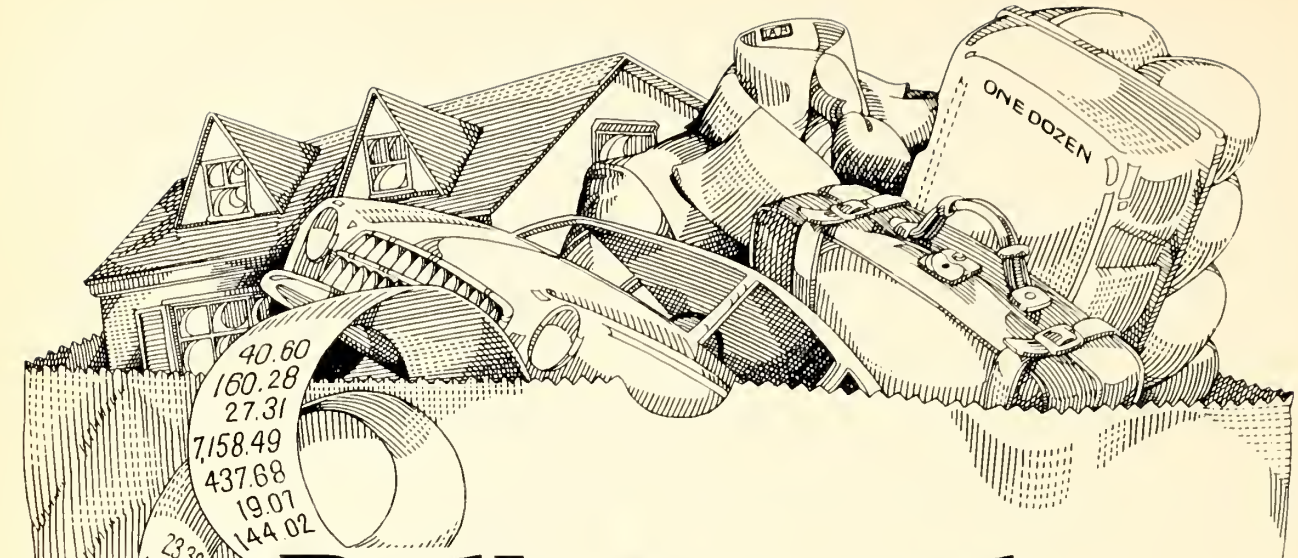
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Health Perspectives In Rhode Island: A Sample Survey

Open And Participatory Health Planning Is More Democratic, More Acceptable, And Of Better Quality

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Public Law 93-641, The National Health Planning and Resources Development Act of 1974, mandates citizen participation in the health system planning process and in the adoption of health system plan documents. This survey represents one of several attempts that will be made in Rhode Island to involve citizens in the 93-641 planning process.[1] The survey questionnaire approach permits the participation of many organizations and individuals in a standardized nominal fashion.

It should be emphasized that this survey is an **opinion** survey. Health planning should be based on both values and facts. Thus, the opinions offered via this survey will be considered, along with other less subjective information, in the health system planning process.

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SURVEY METHODS

This health system opinion survey is based on a survey instrument which was designed by the Office of Health System Planning, Health Planning and Resources Development, Rhode Island Department of Health. In terms of structure, the questionnaire instrument is composed of four close-ended questions (i.e., multiple choice) and three open-ended questions (i.e., unstructured). In terms of substance, four questions relate to problem identification, two to solution recommendation , and one to the questionnaire itself.

A nonprobability, judgemental sample of 195 agencies was drawn for this survey. A judgemental sample was utilized in order to insure a mix of organizations which is consistent with the representational requirements of P.L. 93-641. In terms of types of groups represented, the sample includes citizen advocacy groups (39), environmental groups (18), health care groups (82), third party payors (5), and governmental groups (51). In terms of the definitions of "providers"

and "consumers" provided by P.L. 93-641, the sample includes both provider groups (112) and consumer groups (83).

The survey instrument was mailed out to the 195 organizations in the sample on December 1, 1976. Each questionnaire was coded so that follow-ups would be possible, while maintaining confidentiality at the same time. During the first two weeks of January 1977 the agencies which had not responded were contacted by telephone. When the need existed, additional questionnaires were mailed out to the sample agencies. On January 28 survey responses were closed out. That is, after that date return questionnaires were no longer accepted for analysis.

SURVEY RESPONSE RATE

As of the closing date, 112 or 57 per cent of the questionnaires were returned. In terms of types of groups, the best response was received from third party payors (100 per cent) and health care groups (63 per cent). Citizen advocacy groups had a 62 per cent response rate. The worst response was received from government groups (45 per cent) and environmental groups (44 per cent). The low response from environmental groups is probably related to the fact that much of the survey instrument deals with personal health service issues.

In terms of the consumer/provider classification system, the providers' response rate was better than the consumers' rate (Table 1).

There appears to be a significant positive correlation between response rates and day-to-day involvement with health services, both from the categorical (i.e.,Third party, health care, citizen advocacy, governmental, environmental) perspective and from the provider/consumer perspective.

CLOSED-ENDED RESPONSES

Survey questions 1, 2, 3, and 4 were designed to: 1) obtain standardized or uniform responses and 2) cover a wide range of issues with respect to health system problems and solutions.

Health Status Problems. Six of the twenty listed health status problems were deemed to be a "Major Problem" by two-thirds (66.6 per cent) or more of the respondents. These major problems are: 1) alcoholism, 2) heart and circulatory disease, 3) cancer, 4) mental disorders, 5) accidents, and 6) drug abuse (Table 2).

Providers and consumers responded to this question in a remarkably similar fashion.

Health Service Availability. Most of the respondents do not see health service overdevelopment as a problem in Rhode Island. None of the thirty-five listed services were considered to be overdeveloped by more than thirty per cent (30 per cent) of the respondents. However, the following services

TABLE 1

Consumer/Provider Response Rates

	Questionnaires Sent Out	Questionnaires Returned	Response Rate
Provider Groups	112	75	67%
Consumer Groups	83	37	45%
Total	195	112	57%

TABLE 2

Major Health Status Problems

Major Problems	Percent of Respondents Which So Indicated
1. Alcoholism	96%
2. Heart and Circulatory Disease	88%
3. Cancer	83%
4. Mental Disorders	74%
5. Accidents	73%
6. Drug Abuse	70%

TABLE 3

Overdeveloped Health Services and Resources

Services and Resources	Percent of Respondents Which Indicated Overdevelopment
1. Nursing Homes.....	29%
2. Surgical Services	25%
3. Hospitals.....	24%
4. Nursing Personnel.....	16%
5. Obstetric Services	15%
6. Clinical Laboratory Services	12%

and resources were deemed to be "overdeveloped" most often: 1) nursing homes, 2) surgical services, 3) hospitals, 4) nursing personnel, 5) obstetric services, 6) clinical laboratory services (Table 3).

On the other hand, underdevelopment of certain health services is perceived to be a problem in Rhode Island by many of the respondents. Of the thirty-five listed, the following services and resources were deemed to be "Underdeveloped" most often: 1) alcoholism services, 2) health education services, 3) mental health services, 4) personal health promotion, 5) drug abuse services, and 6) home health care (Table 4).

Based on the results of this survey, it appears that providers are more likely to perceive overdevelopment than are consumers. For example, 21 of the 24 respondents which marked "hospitals" as being "overdeveloped" are provider groups. Providers and consumers appear to be more alike in their perceptions of underdevelopment.

Quality, Access, Cost. Seventy-nine per cent (79 per cent) of the respondents view the "cost of health services" to be a major problem in Rhode Island, while only thirty-six per cent (36 per cent) and twenty-six per cent (26 per cent) respectively perceive access and quality of health services to be a major problem in Rhode Island. Both providers and consumers rank-ordered these three items the same in terms of problem areas, i.e. 1) cost 2) access, and 3) quality.

Intervention Strategies. In general, the respondents can be characterized as being inclined toward intervention. Only two of the thirty-four actual or potential intervention strategies listed received more "not supportive" votes than "supportive" votes. These two very unpopular intervention strategies are: "physician advertising" and "consumer control of health services." Approximately half of the actual or potential intervention strategies (16 of 34) were supported by two-thirds (66 per cent) or more of the respondents (Table 5).

Of all the intervention strategies listed, the following six were the least supported by the respondents: 1) physician advertising, 2) consumer control of health services, 3) regulation of physician geographic distribution, 4) regulation of physician fees, 5) regulation of physician specialty distribution,

TABLE 4

Underdeveloped Health Services

Services and Resources	Percent of Respondents Which Indicated Underdevelopment
1. Alcoholism Services	75%
2. Health Education Services	70%
3. Mental Health Services	68%
4. Personal Health Promotion	67%
5. Drug Abuse Services	66%
6. Home Health Care	65%

TABLE 5

Most Supported Intervention Strategies

Intervention Strategy	Percent of Respondents Which Do Support Same
1. School-based Health Education	92%
2. Home Health Care	88%
3. Ambulatory Care Centers	85%
4. Day Health Care	78%
5. Family Planning	77%
6. Perodic Reexamination of Health Providers	74%
7. Strict Environmental Controls	73%
8. Mass Media Health Promotion	72%
9. Regionalized Health Care Networks	71%
10. Second Opinion on Surgery	71%
11. Nurse Practitioners	70%
12. Professional Standards Review Organizations	70%
13. Regulation of the Nutritional Value of Food	68%
14. Outpatient Surgery	68%
15. Deinstitutionalization	68%
16. Physicians Assistants	68%

TABLE 6

Least Supported Intervention Strategies

Intervention Strategy	Percent of Respondents Which Do Not Support Same
1. Physician Advertising	42%
2. Consumer Control of Health Services	41%
3. Regulate Physician Geographic Distribution	36%
4. Regulate Physician Fees	31%
5. Regulate Physician Specialty Distribution	30%
6. Mandatory Use of Seat Belts	25%

and 6) mandatory seat belt use. However, it should be noted that in no case was the percentage of nonsupport above fifty per cent (50 per cent) (Table 6).

Provider and consumer groups rated most intervention strategies in a similar manner. However, some differences between providers and consumers are detectable. For example, twice as many consumer groups (46 per cent vs. 23 per cent) are supportive of "consumer control of health services."

OPEN-ENDED RESPONSES

Survey questions 5 and 6 were designed to: 1) allow for freedom of expression and 2) to get a sense of relative importance, with respect to problems and solutions. Question 5 asked the respondents to list their choice of the highest ranking health system problem. Question 6 asked the respondents to list their choice of the highest priority health system solution.

Highest Ranking Health System Problem. Ninety-four (94) or 84 per cent of the survey respondents listed a highest ranking health system problem. These problems were organized into clusters in order to summarize the respondents' perception. The following eight problems, which are rank-ordered, accounted for 66 per cent of the problems reported as being of the highest priority: 1) the cost of health care, 2) alcoholism, 3) uncoordinated, fragmented health services, 4) mental illness/mental health care, 5) lack of decentralized ambulatory care, 6) lack of preventive medicine, 7) lack of adequate financing for health care, and 8) lack of rehabilitative care. Table 7 shows the distribution of "votes" for the highest ranking health system problem.

Highest Priority Health System Solution. Eighty-three or 74 per cent of the survey respondents listed a highest priority health system solution or recommendation. These solutions were also organized into clusters in order to summarize the respondents' perception.

The following eight recommended solutions, which are rank-ordered, accounted for 83 per cent of the solutions reported as being of the highest priority: 1) improved health education, 2) better health planning, 3) greater emphasis on decentralized ambulatory care, 4) strengthened regulation of health services, 5) develop better mental health services, 6) improve health insurance, 7) provide for greater citizen participation in health planning and 8) establishing mechanisms for coordinating health services.

Table 8 shows the distribution of "votes" for the highest priority health system solution.

SUMMARY AND CONCLUSIONS

Health Planning which is conducted in an open and participatory fashion is not only more democratic and more acceptable, but it is also better planning because more perspectives are taken into consideration.

TABLE 7

The Highest Ranking Health System Problem

Item	Number of "Votes"	Percent
1. The cost of health care	16	17%
2. Alcoholism	12	13%
3. Uncoordinated, fragmented health services	10	11%
4. Mental illness/mental health care	7	7%
5. Lack of decentralized ambulatory care.....	6	6%
6. Lack of preventive medicine	4	4%
7. Lack of adequate financing for health care	4	4%
8. Lack of rehabilitative care .	4	4%
Total.....	94	100%

TABLE 8

The Highest Priority Health System Solution

Item	Number of "Votes"	Percent
1. Improved health education .	13	16%
2. Better health planning	10	12%
3. Greater emphasis on decentralized ambulatory care....	9	11%
4. Strengthen the regulation of health services	8	10%
5. Develop better mental health services	7	8%
6. Improve health insurance ..	6	7%
7. Provide for greater citizen participation in health planning	6	7%
8. Establish mechanisms for coordinating health services	6	7%
Total.....	83	100%

This opinion survey was conducted in order to tap the collective wisdom of a wide variety of organizations in Rhode Island with respect to health issues. Taking into account all the results of this survey (e.g. Tables 2-8), the perceived major health issues which face Rhode Island can be defined.

Thus, if one accepts the results of this survey as being truly representative of the health situation in Rhode Island, then Rhode Island needs to address the following key issues: 1) the **rising cost** of health care, 2) the prevalence and treatment of **alcoholism**, 3) **health education**, 4) the prevalence and treatment of **mental illness**, 5) **ambulatory health care**, 6) the **coordination** of health services, 7) the prevalence and treatment of **drug abuse**, and 8) **home health care.**

Finally , it should be acknowledged that survey instruments themselves bias results. For example, due to an oversight "pediatric services" was not included on the list of health services and resources (Question 2) and very few respondent utilized the "fill in" spaces.[1] Therefore, while some knowledgeable observers believe that pedicatric services are overdeveloped in Rhode Island, we do not know where the survey respondents stand on this issue.

ACKNOWLEDGEMENT

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Cigarette Smoking And Cancer Of The Lung: A Review

The Increased Risk Of Lung Cancer In Cigarette Smokers Is Now Indisputable

By Moe Kakvan, M.D.
S. Donald Greenberg, M.D.

Since the initial Surgeon General's report in 1964[8], many other studies and investigations concerning the association of cigarette smoking and lung cancer have been published.[1-29] The cause-and-effect relationship between chronic cigarette smoking and development of lung cancer has been related to the cumulative dose of cigarette hydrocarbons.[1, 5, 17, 19, 30-32]

In 1914 the total number of lung cancer deaths in the United States was only 317; in 1980 it is estimated that over 80,000 will die of this disease. Nevertheless, we in the United States spend more than 9 billion dollars annually on tobacco products.[3]

Although the evidence for the cause-and-effect relationship between cigarette smoking and lung cancer has been almost incontrovertable for more than 20 years, some investigators, including Passey,[33] have contended that lung cancer may be a sequel to non-specific lung tissue damage rather than to the action of cigarette hydrocarbons. The purpose of this study is to present a timely review of the major investigations concerning the development of lung cancer in man, with particular emphasis devoted to cigarette smoking and its chemical, biological, pathological, and clinical aspects.

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CHEMICAL COMPOSITION OF TOBACCO AND EXPERIMENTAL EVIDENCE FOR CAUSE AND EFFECT RELATIONSHIP OF CIGARETTE SMOKING AND LUNG CANCER

Stedman[34] reports a list of various components in both tobacco and cigarette smoke which comprise approximately 1,200 ingredients, many of which may contribute significantly to the carcinogenic properties of tobacco leaves and smoke. The collection of "tar" from cigarette smoking machines has also been investigated[35] by a number of institutions, including Roswell Park Memorial Institute, where such a machine smokes 20,000 cigarettes daily, yielding 3/4 of a pound of tar. When dissolved in a dilute solution. the tobacco tar from a few packages of cigarettes will produce a 60 per cent incidence of skin tumors within a year when applied repeatedly to the shaven skin of small experimental animals. Analysis of the "tar" from cigarette smoke reveals at least 18 hydrocarbons, 10 of which can induce carcinomas in animals. In addition, cigarette smoke analysis has revealed at least 300 toxic compounds or substances including carbon monoxide, lead, cyanide, nicotine, arsenic, and formaldehyde.[30, 37, 38] The nicotine, which is an alkaloid, is a major component of cigarettes and has no specific medi-

cal use. Nicotine is marketed as a lead insecticide under the label of "Black Leaf 40" and ranks in toxicity with cyanide with such potency that the contents of one cigar, administered in a pure state, could kill two men. Nicotine is readily passed in the milk of nursing mothers, and infants born to smoking mothers are, on the average, six ounces lighter than those born to mothers who are not cigarette smokers.

Cigar tobacco is air-cured, having a low sugar content (0.5-2 per cent) and gives rise to an alkaline smoke, while cigarettes contain flue-cured tobacco with a sugar content of 20-25 per cent and produce an acid smoke.[39] Enlish tobacco, which is flue-cured with a high sugar content (18 per cent) is believed for these reasons to produce a higher incidence of cancer than French tobacco, which is air-cured with a sugar content of only 2 per cent. This may also account for the incidence of lung cancer in France being 33 per cent below that of Great Britian.

The lower pH of cigarette smoke may be a significant factor in the greater frequency of lung cancer in cigarette smokers as compared to smokers of pipes and cigars.

PATHOPHYSIOLOGY OF CIGARETTE SMOKING

Inhaled cigarette smoke alters the hydrogen ion content of the mucus within the goblet cells of both the respiratory epithelium and the bronchial glands and leads in turn to squamous metaplasia, dysplasia, and finally anaplastic changes.[11] It has been suggested that cigarettes are dangerous not only because of a carcinogenic agent or agents, but also because of the high hydrogen ion concentration in their smoke.

Harris and colleagues[40] have stated that a marked increase in number of free alveolar macrophages ("FAMs") among cigarette smokers suggests that even in the "asymptomatic" smoker, a significant stimulation of the pulmonary defense system takes place. Apparently, the "FAMs" play an important role in the inactivation of the toxic components of cigarettes, perhaps in part by phagocytosis.[41]

The pharmacological effects of smoking depend to a great degree on the action of nicotine. Absorption of nicotine causes an increased heart rate, blood pressure, release of epinephrine and norepinephrine from the adrenal medulla, blood sugar, peripheral vascular spasm, and release of free fatty acids. Increased adhesiveness and aggregation of circulating blood cell elements are also noted.[27, 42]

EFFECTS OF CIGARETTE SMOKING ON THE LUNGS

Cigarette smoking is the most commonly encountered cause of vasoconstriction. The nicotine vasoconstrictor effect from smoking one cigarette lasts from 20 to 30 minutes and results in an increased blood pressure and pulse rate. The "chain smoker" is in a constant state of vasoconstriction.[14, 44, 45] Mucous membranes are also affected by this phenomenon of vasoconstriction and suffer from both hypoxia and decreased moisture over prolonged periods of time.

The basal ("reserve") cells of the respiratory epithelium normally proliferate and mature, transforming into columnar ciliated and goblet (mucus secreting) cells which in turn age, exfoliate, and are replaced each 7 to 30 days.[46] In chronic cigarette smokers the normal respiratory epithelial turn-over is altered and becomes flattened and squamous metaplasia of the respiratory epithelium is seen. Most investigators agree that chronic cigarette smoking initiates a pathological process by producing progressive respiratory epithelial changes which up to a stage of frank anaplasia are reversible with the cessation of smoking. Statistical data from Roswell Park Memorial Institute indicate that there is a substantial decline and risk of death in those who have stopped smoking. The apparent ability to "reverse the process" is observed in individuals who have stopped smoking for as long a period of time as 40 years. Ten years after the cessation of smoking the risk of developing bronchogenic cancer approaches that of people who have never smoked. The incidence of lung cancer increases with the mean number of puffs taken per cigarette, duration of smoking (pack-years) of the individual, amount of smoking per day and the number of puffs taken toward the end of the cigarette.

In several studies, the men who died of squamous cell carcinoma or unidentified small ("oat") cell carcinoma of the lung were all

cigarette smokers in whom the bronchial epithelium also demonstrated early changes of squamous metaplasia and dysplasia.[5, 47]

FACTORS CONTRIBUTING TO CIGARETTE SMOKING AND LUNG CANCER

The incidence of chronic bronchitis is greater among cigarette smokers[10] than among non-smokers, and such patients are at a higher risk of development of lung cancer. Also, cigarette smoking asbestos workers have a significantly higher incidence of lung cancer than the general population or cigarette smokers who are not exposed to asbestos.[22]

The age at onset of lung cancer is variable and may be effected by a number of factors, including geographic location.[1, 48, 49] In New Zealand, there is a significantly higher incidence of lung cancer among immigrants from Great Britain than among New Zealanders, suggesting that migrants from Britian carry with them special risk factors for development of lung cancer.[48, 50] Male cigarette smokers have traditionally had a higher incidence of lung cancer than females who smoke; however, the incidence of lung cancer in women is increasing and is probably related to the fact that more women are now smoking cigarettes. The role of heredity in lung cancer is obscure, but it also may contribute in some way.[25]

RELATIVE IMPACT OF CIGARETTE SMOKING AND AIR POLLUTION ON LUNG CANCER

There is as yet no clear relationship of air pollution to the development of bronchogenic carcinoma although it has been observed that carcinogens are present in the polluted air of cities. Some observers have stated that the incidence of cancer of the lung is greater among urban dwellers than in rural areas, greater in large cities than in smaller cities, and definitely related to the duration of exposure.

The possible interaction between cigarette smoking and air pollution in urban areas is of importance. Recent epidemiological studies of lung cancer mortality[9, 14, 22] indicated that in cities such as Dublin, Ireland, where approximately a third of the men between the ages of 55 and 64 have smoked over 20 cigarettes per day for 30 years, one tenth of these smokers eventually die of lung cancer.

EFFECTS OF SMOKING A LESS HAZARDOUS CIGARETTE AND CANCER OF THE LUNG

A less hazardous cigarette must be found, because it is not possible to ban cigarette use, and large numbers of people will continue to smoke despite all warnings. A less toxic cigarette must be acceptable to smokers and at the same time provide a clearly decreased likelihood of lung cancer. Unfortunately, these two requirements are largely antithetical when currently available technology is applied. The modern cigarette can be provided with filters or otherwise manipulated to reduce tar, nicotine, and noxious gas emission to minimal or almost zero levels. While this approach would fulfill the need to reduce noxious agents, it is hardly satisfactory to smokers. Research at the National Cancer Institute has attempted to solve this antithesis by developing an acceptable but less hazardous cigarette. Can we manufacture a less hazardous cigarette? A low tar and low nicotine commercial cigarette containing approximately 30 per cent less tar and nicotine has been produced. Sales promotion and advertising have clearly demonstrated the ability to market such a product. It seems reasonable therefore to recommend the establishment of legal maximum standards for tar and nicotine emission of commercial cigarettes, and it is now timely to propose that each cigarette contain no more than 20 mg of tar and one mg of nicotine.

Filters may act selectively to remove certain components from cigarettes, but this action is presently limited to constituents in the vapor phase.[18, 20] It is not certain that filters reduce the danger to human subjects smoking these products. The criticism directed at Columbia University for sponsoring a new filter is an interesting example of the controversy in this field.[51] Several investigators and spokesmen for health agencies and the tobacco industry have agreed that there is presently a lack of factual evidence on the effectiveness of filters at controlling the smoking hazard.

EFFECTS OF SMOKING WITHDRAWAL CLINICS

Clinics have been established using both educational programs and medications as substitutes for smoking. Various drugs have also

been employed and have initially shown promise in assisting the cigarette smoker in giving up his habit. Long-term medication with lobeline sedatives or various stimulants has not proved particularly beneficial and is clearly an unsafe practice. It is generally observed that men seem to be more successful in "kicking the habit" than women and that candidates over 40 years of age are more successful than their younger counterparts.[25]

The high rate of cigarette smoking among high school students continues to be alarming. If the present rate continues, it is predicted that the students now in school will eventually contribute one million new cases of lung cancer to the medical annals. The cigarette smoker who cannot quit should practice the following: 1. Do not deeply inhale the tobacco smoke; 2. Take fewer puffs on each cigarette; 3. Substitute a pipe, a cigar; and 4. Smoke moderately.

CONCLUSIONS

Cigarette smoke is probably responsible for most cases of cancer of the lung and illness and death from cancer of the lung affects individuals in their most productive and influential years.

While the causes of lung cancer are obscure and research in a number of fields continues, the increased risk of lung cancer in the cigarette smoker is now indisputable.

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***Note:* Carefully coordinate *in vitro* sulfonamide sensitivity tests with bacteriologic and clinical response; add aminobenzoic acid to follow-up culture media. The increasing frequency of resistant organisms limits the usefulness of antibacterials including sulfonamides.** Measure sulfonamide blood levels as variations may occur; 20 mg/100 ml should be maximum total level.

Contraindications: Children below age 12; sulfonamide hypersensitivity; pregnancy at term and during nursing period; because Azo Gantanol contains phenazopyridine hydrochloride it is contraindicated in glomerulonephritis, severe hepatitis, uremia, and pyelonephritis of pregnancy with G.I. disturbances.

Warnings: Safety during pregnancy not established. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been reported and early clinical signs (sore throat, fever, pallor, purpura or jaundice) may indicate serious blood disorders. Frequent CBC and urinalysis with microscopic examination are recommended during sulfonamide therapy.

Precautions: Use cautiously in patients with impaired renal or hepatic function, severe allergy, bronchial asthma; in glucose-6-phosphate dehydrogenase-deficient individuals in whom dose-related hemolysis may occur. Maintain adequate fluid intake to prevent crystalluria and stone formation.

Adverse Reactions: *Blood dyscrasias* (agranulocytosis, aplastic anemia, thrombocytopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia); *allergic reactions* (erythema multiforme, skin eruptions, Stevens-Johnson syndrome, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis); *G.I. reactions* (nausea, emesis, abdominal pains, hepatitis, diarrhea, anorexia, pancreatitis and stomatitis); *CNS reactions* (headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo and insomnia); *miscellaneous reactions* (drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L. E. phenomenon). Due to certain chemical similarities with some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia. Cross-sensitivity with these agents may exist.

Dosage: Azo Gantanol is intended for the acute, painful phase of urinary tract infections. *Usual adult dosage:* 2 Gm (4 tabs) initially, then 1 Gm (2 tabs) B.I.D. for up to 3 days. If pain persists, causes other than infection should be sought. After relief of pain has been obtained, continued treatment with Gantanol (sulfamethoxazole) may be considered.

Note: Patients should be told that the orange-red dye (phenazopyridine HCl) will color the urine.

Supplied: Tablets, red, film-coated, each containing 0.5 Gm sulfamethoxazole and 100 mg phenazopyridine HCl—bottles of 100 and 500.

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Before prescribing, see complete prescribing information in SK&F Co. literature or PDR. A brief summary follows:

* **Warning**
This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual. If this combination represents the dosage so determined, its use may be more convenient in patient management. Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

* **Indications:** When the combination represents the dosage determined by titration: Adjunctive therapy in edema associated with congestive heart failure, hepatic cirrhosis, the nephrotic syndrome, Corticosteroid and estrogen-induced edema, idiopathic edema; hypertension, when the potassium sparing action of triamterene is warranted. (See Box Warning.) Routine use of diuretics in healthy pregnant women is inappropriate; they are indicated in pregnancy only when edema is due to pathological causes.

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs.

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used. Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency. Periodically, serum K^+ levels should be determined. If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood. Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K^+ frequently, both can cause K^+ retention and elevated serum K^+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone.

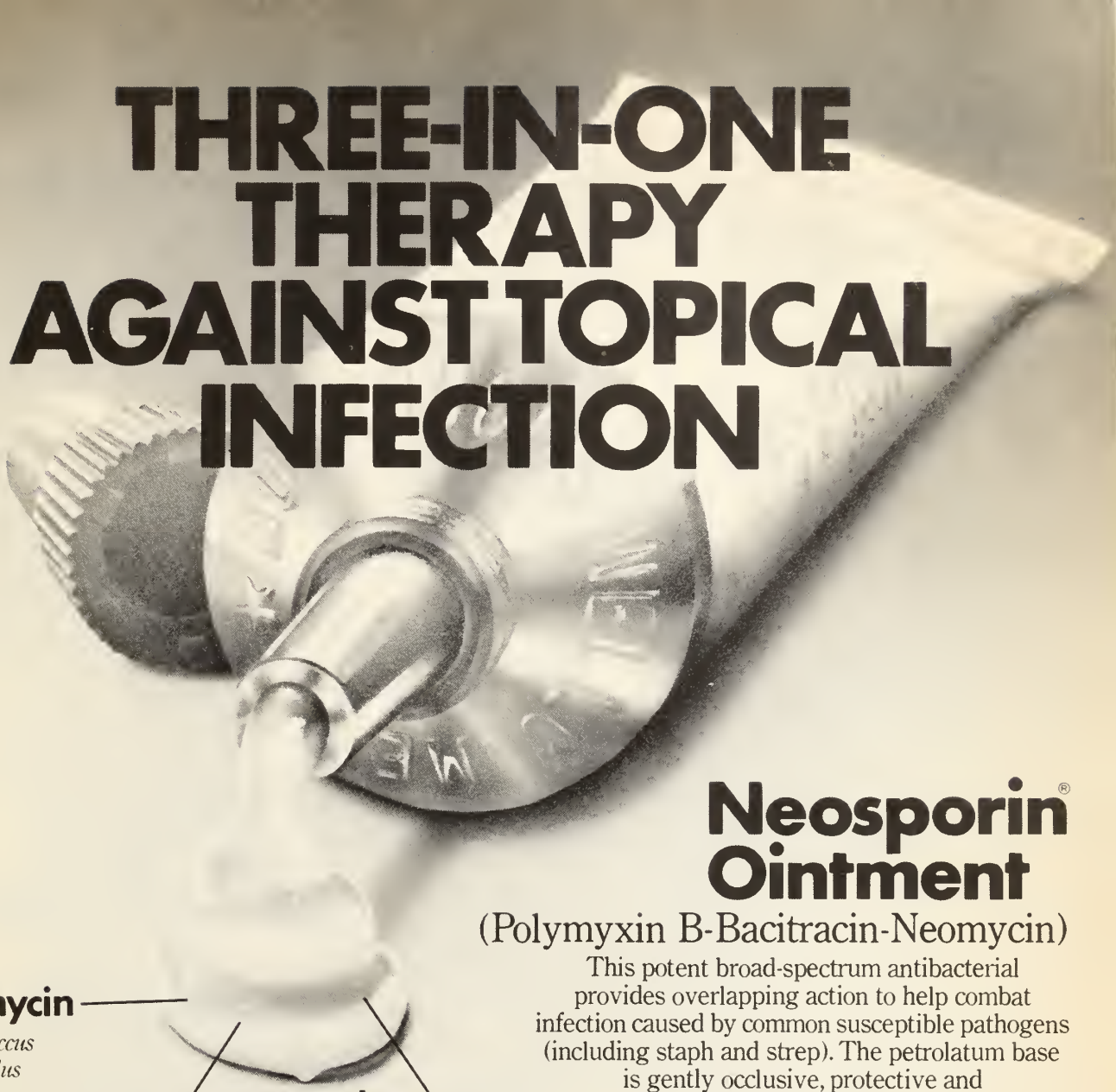
Supplied: Bottles of 100 and 1000 capsules; Single Unit Packages of 100 (intended for institutional use only).

FOR LONG-TERM CONTROL OF HYPERTENSION.* SERUM K^+ AND BUN SHOULD BE CHECKED PERIODICALLY. (SEE WARNINGS SECTION.)

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WARNING: Because of the potential hazard of nephrotoxicity and ototoxicity due to neomycin, care should be exercised when using this product in treating extensive burns, trophic ulceration and other extensive conditions where absorption of neomycin is possible. In burns where more than 20 percent of the body surface is affected, especially if the patient has impaired renal function or is receiving other aminoglycoside antibiotics concurrently, not more than one application a day is recommended.

When using neomycin-containing products to control secondary infection in the chronic dermatoses, it should be borne in mind that the skin is more liable to become sensitized to many substances, including neomycin. The manifestation of sensitization to neomycin is usually a low grade reddening with swelling, dry scaling and itching; it may be manifest simply as failure to heal. During long-term use of neomycin-containing products, periodic examination for such signs is advisable and the patient should be told to discontinue the product if they are observed. These symptoms regress quickly on withdrawing the medication. Neomycin-containing applications should be avoided for that patient thereafter.

PRECAUTIONS: As with other antibacterial preparations, prolonged use may result in overgrowth of nonsusceptible organisms, including fungi. Appropriate measures should be taken if this occurs.

ADVERSE REACTIONS: Neomycin is a not uncommon cutaneous sensitizer. Articles in the current literature indicate an increase in the prevalence of persons allergic to neomycin. Ototoxicity and nephrotoxicity have been reported (see Warning section).

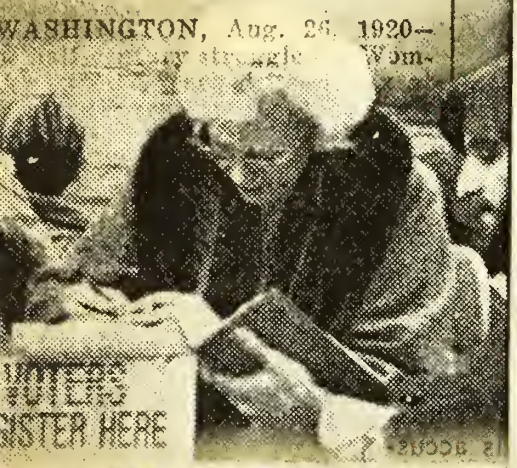
Complete literature available on request from Professional Services Dept. PML.

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Social Security Bill Is Signed; Gives Pensions to Aged, Jobl

Roosevelt Approves Message Intended to Benefit 30,000, Persons When States Adopt Cooperating Laws—He Ca the Measure 'Cornerstone' of His Economic Program

WASHINGTON, Aug. 14, 1 The Social Security Bill, prov a broad program of unemploy insurance and old age pen and counted upon to benefit 20,000,000 persons, became la day when it was signed by I dent Roosevelt in the presen those chiefly responsible for ting it through [illegible].

Mr. Roosevelt cal[illegible] me "the cor[illegible]erstone [illegible]u whic[illegible]s being [illegible] me[illegible]s c[illegible]mple [illegible] ri[illegible]to [illegible]

SENATE APPROVES 18-YEAR OLD VOTE IN ALL ELECTIONS

Amendment to Constitution is Sent to House, Where Passage is Expected

WASHINGTON, March 10, 1971—The Senate approved today, 94 to 0, and sen[illegible]o

JUL SIGNE the Draf Ends No

TRUMAN CLOSES ED NATIONS CONFEREN TH PLEA TO TRANSLATE CHARTER INTO DEEDS

NEW WORLD HOPE

President Hails 'Great Instrument of Peace,' Insists It Be Used

HISTORIC LANDMARK

Meeting Gives Standing Ovation as Executive Pictures Peace Gain

"If we fail to use it," he declared to the solemn final meeting of the delegates, 'we shall betray all of those who have died in order that we might meet here in freedom and safety to create it.'

"If we seek to use it selfishly—for the advantage of any one nation or any small group of nations—we shall be equally guilty of that betrayal."

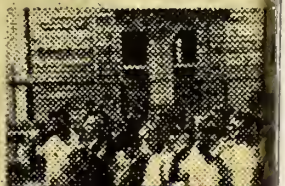
Fervent Interpolation

The President, speaking in the auditorium of the War Memorial Opera House, built in memory of sons of the Golden Gate city who gave their lives in the first World War, in which he himself served, seemed to give unconscious expression to the solemn feeling of the occasion when, at the outset of his speech, he interpolated the words, half a hope, half a prayer:

"Oh, what a great day this can be in history!"

Just before the plenary session the President accompanied the

WASHINGTON, Jan. 27, 1973—"With the signing of the peace agreement in Paris today, and after receiving a report from the Secretary of the Army that



PATIENT PACKAGE INSERTS: A CONCEPT WHOSE TIME HAS COME?

The consumer's right to know is an irreversible and desirable trend of the Seventies. It extends, and properly, to a patient's right to know more about his or her prescription medications. One way, gaining favor, is through patient package inserts. Wisely-prepared and properly distributed when medically indicated, they could markedly improve patient knowledge and drug therapy—laudable goals by anyone's standards.

The PMA endorses these goals and will work with government, the health professions and consumers to achieve them.

The Advantages

The concept holds promise of benefits: better patient understanding of the product prescribed, better adherence to the treatment plan, and more awareness of possible side reactions.

Every doctor has had patients who fail to finish antibiotic regimens because they feel better. Some patients assume that if one tranquilizer or analgesic is good, two may be twice as good. Still others fail to report dizziness while on antihypertensive therapy—and so on.

Problems like these might arise less often if the patient received written information in addition to verbal instructions. Some studies suggest that patients are more receptive to such materials, and they more often understand the verbal instructions and follow them, when inserts are used.

The Disadvantages

There are also some potential problems. Obviously, the inserts must be clearly phrased, without extraneous or complex detail. How much information is enough? How can it be kept current? Should all patients receive the same information? Should inserts be included with all drugs? Should only potential problems be listed or are patients better off with a "fair balance" presentation that describes usefulness as well as drawbacks?

These and similar questions require answers, since model inserts have yet to be properly developed and tested. Despite the need for these studies, the FDA is proceeding prematurely with inserts on selected products. We think the Congress is the only place where the matter can be given the proper legal status and direction, particularly since it represents a conceptual change in the legal, medical and social framework of the nation's prescription drug information system.

The Solution

The PMA believes that carefully-devised pilot studies of various kinds of inserts are needed. They should be developed and implemented with full participation by doctors, pharmacists, consumers, communications experts and the drug industry. Such studies will provide reliable pathways to follow, so that inserts will be useful aids to medical practice.

And particularly we think that you should be closely involved in this debate and in these studies and decisions. Otherwise, people with less experience and qualifications may control the purposes, content and use of a tool with considerable promise for improved patient care. It could make a difference in your practice tomorrow, and more importantly, in the health of your patients.

PMA
THE PHARMACEUTICAL MANUFACTURERS ASSOCIATION
1155 FIFTEENTH ST. N.W. WASHINGTON D.C. 20005

Editorials

THE RHODE ISLAND MEDICAL SOCIETY LIBRARY

From time to time "pragmatists" among us seek to rid the Society of its Library, looking upon it as a financial burden. There are "better ways," we are told, in which we could use the money — perhaps for more staff, more legal talent, or more lobby power.

Somehow the Library has survived various assaults over the years. We hope that it will survive the present generation of malcontents as well. We shall not attempt here to retell the story of our excellent Library. It has been told very well on a number of occasions in the past. Suffice it to say that several generations of devoted scholars and benefactors have left for us a priceless heritage housed in a gem of a mini-Renaissance palace. It is one of the better medical libraries in America and contains volumes of rare value.

What is its present role? It is still the central medical repository in the state. We hear that some of our colleagues in the periphery of our tiny commonwealth believe that they are supporting it for the benefit of Providence doctors. The fact is that all of the hospital libraries throughout the state use its resources on a daily basis.

Through exchanges with the **Rhode Island Medical Journal**, publications from most states and many foreign countries are received which are available nowhere else in the state.

The Library is used on a daily basis by students at all levels (from high school to graduate school), by lawyers, news writers, social workers, third party payers, state agencies, the public generally, and many others, not to mention the physicians who use the library abundantly. It is a community resource which the profession should feel honored and privileged to support. It adds great credibility to the non-profit posture of the Medical Society. Its presence in close proximity to the Rhode Island Medical Society staff and the Editors of the **Rhode Island Medical Journal** provides services which they would miss sorely if they were deprived of the ready availability and the daily contacts — much more than they may realize because of the easy, casual, and comfortable interchange which exists.

It should be of interest to our members that the St. Louis Medical Society, a district society comprised of 1600 members, approximately the same size as the Rhode Island Medical Society, supports a handsome building, a fine medical library, open to the public, and an excellent medical museum, which attracts visitors not only from the city, but from out of town as well. In addition it publishes **St. Louis Medicine**, an attractive bulletin in journal format printed on coated paper. We would do well to emulate those who pursue excellence. It will not hurt our image in the community.

We urge our colleagues to think long and hard before they give Humpty Dumpty a fatal shove. Let the loyal and resolute supporters of this venerable and valuable property prevail!

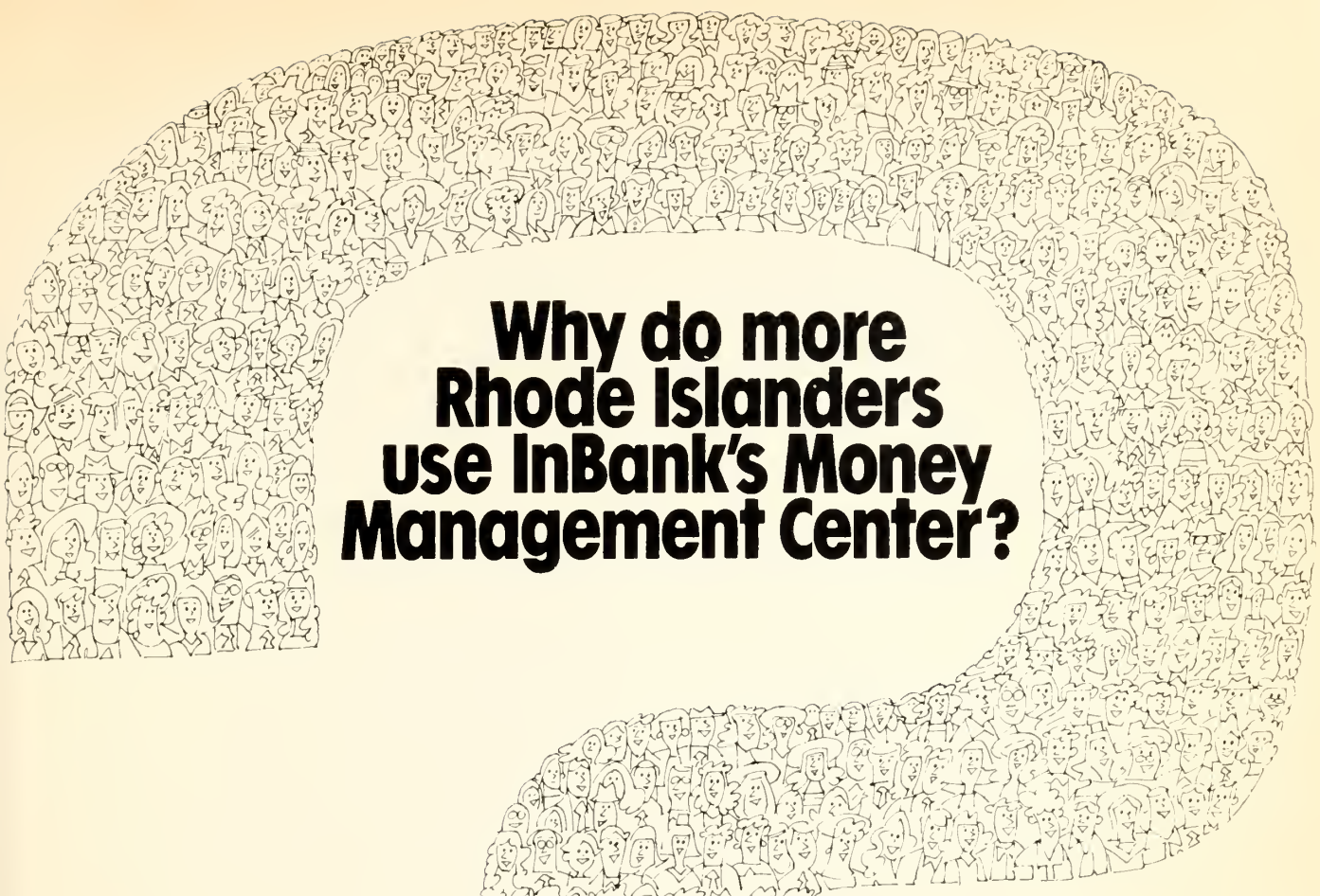
Seebert J. Goldowsky, MD

IN NEWPORT



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ANTIHYPERTENSIVE DRUGS: A PRIMER

It is now well established that control of hypertension can diminish the numbers of strokes and heart attacks and prolong life. Because of this, detection of hypertension has become a major endeavor in the United States. The methods of studying cases are well established and are beyond the scope of this editorial. Individual cases may respond brilliantly to surgery, such as those due to pheochromocytoma or renovascular diseases. Management of most cases, however, must depend on medical treatment with one or several preparations from the currently available galaxy of antihypertensive agents. The vast majority of cases now respond brilliantly to such management with the probability of substantially reducing morbidity, disability, and mortality. What are the available drugs? They fall into three broad categories: the diuretics, the vasodilators, and the adrenergic blocking agents.

DIURETICS

All diuretics induce an obligatory loss of salt and water through the kidneys, but by various mechanisms. They may increase renal blood flow and the glomerular filtration rate; act in the proximal tubule by inhibiting carbonic anhydrase, and in the distal tubule or loop of Henle by decreasing sodium resorption; or act by aldosterone antagonism.

Thiazides reduce arterial pressure by three mechanisms:

1. Reduction of blood volume sustained even after prolonged administration.
2. Reduction of peripheral vascular resistance, by directly relaxing the smooth muscle of the arteriolar walls.
3. Depletion of sodium in the arterial walls, thus rendering them less sensitive to the constrictor effects of sympathomimetic amines.

Their major action is to induce urinary loss of sodium and water. The major side effect requiring surveillance is hypokalemia and metabolic alkalosis resulting from the augmentated exchange of sodium for potassium and hydrogen ions at the distal convoluted tubule.

Loop diuretics (furosemide and ethacrynic acid) have a powerful diuretic effect. They function by interfering with active sodium resorption by the ascending limb of Henle's loop. This is accomplished by redistribution of the intrarenal circulation. These drugs also tend to produce hypokalemia.

Carbonic anhydrase inhibitors. The common drug in this category is acetazolamide (Diamox®) which functions by reactivating carbonic anhydrase, thus interfering with the generation and resorption of bicarbonate from the proximal convoluted tubule. It is a relatively weak diuretic, but can enhance the effect of other diuretics when used in combination.

Potassium-sparing diuretics include triamterene and the aldosterone antagonist spironolactone. These drugs interfere with the exchange of sodium for potassium and hydrogen in the distal convoluted tubule. Being weak diuretics, they are usually used in combination with the thiazides or loop diuretics to counteract the tendency toward hypokalemia.

Osmotic diuretics (xanthines, plasma volume expanders, glucocorticoids, cardiac glycosides, and other inotropic agents) are seldom used in the prolonged management of hypertension, although they augment the diuresis when combined with loop and distal tubule diuretics by increasing glomerular filtration of sodium and water and blocking resorption of sodium in the proximal tubule.

VASODILATORS

Hydralazine hydrochloride lowers pressure by direct relaxation of the arteriolar smooth muscle. It is usually given orally with a diuretic or a beta-adrenergic blocking agent. It may also be given alone parenterally for hypertensive emergencies. It is associated with reflex cardiac affects and a lupus-like syndrome.

Sodium nitroprusside is reserved for the treatment of hypertensive emergencies. Administered by continuous intravenous drip, it reduces arterial pressure by arteriolar and venular dilation with a resulting decrease in peripheral vascular resistance and cardiac output. Thiocyanate poisoning may result from prolonged administration.

Diazoxide likewise is used only for hypertensive emergences. While related to the thi-

azides, it does not share their saluretic effect. It is given by rapid intravenous injection. As a result of its strong vasodilating action it may produce tachycardia, flushing, and headache. It may also precipitate anginal pain or congestive failure in susceptible individuals because of its potent intropic and chronotropic effects on the heart. It can lead to sodium retention and even hyperosmolar coma.

Prazosin, an oral antihypertensive, was recently made available for general use. Its hypotensive effect is ascribed to vasodilation confined mainly to arterioles. This is accomplished by direct relaxation of vascular smooth muscle by peripheral sympatholytic activity at a site distal to that of the beta-adrenergic blocking agents. It is said to have mild to moderate effect when used as the sole agent in moderate hypertension although less than that of hydrochlorothiazide. Its most useful application may be in conjunction with thiazide diuretics and beta-adrenergic blocking agents as the second or third drug.

Other vasodilators, such as bupicomide and monoxidil, apparently effective for prolonged use, have not yet been released by the FDA.

ADRENERGIC BLOCKING AGENTS

These drugs produce their hypotensive effect by suppressing catecholamine formation, thus facilitating depletion from the adrenergic terminals.

Rauwolfia alkaloids reduce arterial pressure by depleting the postganglionic nerve endings and the midbrain of catecholamines. Side effects resulting from central nervous system depletion of catecholamine and serotonin — drowsiness, muscular rigidity, and depression sometimes with suicidal tendencies — limit their usefulness. Parasympathetic effects such as gastric hyperacidity with peptic ulcer reactivation may also occur.

Alpha-methyldopa has its primary effect on the central nervous system. By stimulation of alpha-adrenergic receptors through its metabolite alpha-normethyl epinephrine, it inhibits sympathetic outflow, thus causing peripheral vasodilatation. It also interferes with catecholamine formation by inhibiting dopa decarboxylase. Among its side effects are drowsiness, orthostatic hypotension, hemolytic anemia, and a lupus-like syndrome.

Guanethidine sulfate is a sympatholytic agent, reducing arterial pressure by depleting catecholamine stores at the postganglionic sympathetic nerve endings. It is reserved for severe hypertensives. Because it produces wide pressure fluctuations with changes in posture, it is customarily used in combination with other agents that will dissipate the extreme swings. A diuretic should be added to prevent volume expansion and a refractory response.

Bethanidine and guanadrel sulphate, new drugs of this series which may act more promptly and produce fewer side effects, are awaiting FDA approval.

Clonidine hydrochloride, the newest of this group, acts by stimulating the central alpha-adrenergic receptors in the midbrain and vasomotor center, thus inhibiting sympathetic outflow and reducing peripheral vascular resistance. Through sympathetic inhibition it decreases renin release by the kidneys. Additionally, it produces bradycardia and decreased cardiac output by stimulating the central vagal cardiodepressor reflex. With a rapid onset and dissipation, it is effective in severe hypertension in combination with vasodilators. It is relatively free of severe side effects.

Alpha-adrenergic blocking agents include **phenoxybenzamine** and **phentolamine.** These are applicable solely for patients with hypertension due to pheochromocytoma (catecholamine-secreting tumors) and for those patients with guanethidine-resistant hypertension who may respond to a combination of guanethidine and an alpha-adrenergic blocking agent. Phenoxybenzamine is administered orally for the prolonged treatment of pheochromocytoma. Phentolamine is given parenterally for the control of hypertensive crisis due to the sudden release of catecholamines. It acts by blocking the vasoconstrictor effects.

Beta-adrenergic blocking agents. Propranolol has recently been released by the FDA for use in hypertension. Other drugs of this group are available in other countries. Extensive reports from overseas have confirmed its effectiveness in hypertension. It appears to produce its effect by inhibiting renin se-

cretion, by a negative inotropic effect with reduced cardiac output, and by a resetting of the baroreceptors. Its side effects include possible aggravation of asthma and peripheral vascular disease, and precipitation of failure in hypertensive heart disease.

Combinations of antihypertensive agents now commonly used have two roles. The first role is to enhance the effect of single agents by blocking at various points the complex command pathways from the hypothalamus to the peripheral vessels. The second is to block the compensatory blood pressure raising mechanisms which tend to counteract the salutory blood pressure lowering effects of the antihypertensives.

The wide variety of presently available antihypertensive drugs provides a choice of regimes for a broad spectrum of hypertensive patients. In most instances the proprietary names have not been included in this summary, but their identification is readily available. Side effects are a variable problem, but may be appreciably lessened in severity when new drugs currently under review are approved by the FDA. In any case careful surveillance is an important part of management.

THE ART OF DOCTOR PEABODY

Fifty years have passed since Doctor Francis Peabody of Harvard published his most famous paper: "The Care of the Patient" in the March 19, 1927 issue of the **Journal of the American Medical Association**. During these fifty years the science of medicine has flourished as never before; diagnosis and treatment of diseases have revolutionized the approach to illness, and the longevity of the people has been extended.

But today Doctor Knowles notes that we are doing better but feeling worse. To remedy this situation we may well turn to Doctor Peabody's essay on the Art of Medicine as complement to the Science of Medicine. He reads today as effectively as he did a half century ago.

"The treatment of a disease may be entirely impersonal; the care of a patient must be completely personal. The failure of the young physician to establish this relationship accounts for much of his ineffectiveness. The treatment of disease is part of the larger undertaking, the care of the patient. One of the essential qualities of the clinician is interest in humanity for the secret of the care of the patient is in caring for the patient."

Doctor Peabody has promulgated one of the great ideals of medicine in this essay and stressed the essential art of medicine in a time of increasing scientific concern.

For the profession of medicine depends on the successful joining of science and art.

John F. W. Gilman, M.D.

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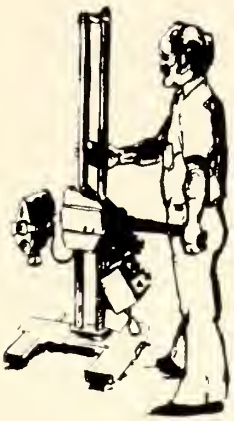
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Guest Editorial

PEDIATRIC HYPERTENSION

Consistently elevated blood pressure readings in children were thought to be predominantly secondary to renal disease until recent years. Younger children and extremely hypertensive children are, in fact, more likely to present with an identifiable cause. Numerous studies have indicated, however, that essential or primary hypertension is far more common than previously suspected. There has been increasing concern about the deleterious effects of hypertension upon numerous organ systems, yet detection of hypertension in growing infants and children has been haphazard. Juvenile hypertension itself may be a precursor of hypertension in adulthood. Thus it is crucial to identify individuals with an increased risk of becoming hypertensive as early in development as possible.

Unfortunately there is presently no accepted definition of pediatric hypertension. Evaluation and treatment of children with elevated blood pressure are also controversial. The Task Force on Blood Pressure Control in Children sponsored by the National Heart, Lung and Blood Institute recommends that asymptomatic children and adolescents with blood pressure readings greater than the 95th percentile for their age group on at least three separate occasions be evaluated for possible secondary etiology, risk factors, family history, target organ damage and long-term follow-up. Blood pressure should be taken on all first degree relatives who are 3 years or older as well. Furthermore, the Task Force suggests that annual blood pressure determinations be given to all youngsters over 3 years old in conjunction with a complete history and physical examination. Primary care physicians can best furnish this service. In addition, a strong school program implementing yearly health care provides an ideal setting for covering most of the pediatric population and assuring continuous surveillance.

Such a program exists in Providence. Our group of medical students will be screening all 1472 2nd graders in the Providence Public School system in order to incorporate blood pressure evaluations into the established school health system. We also would like to collect enough pertinent data and reduce experimental bias sufficiently to produce a valid epidemiologic study. Each child will have height, weight, pulse and 3 separate blood pressure readings done over a period of approximately 15 minutes. This process will begin in early January 1978 and conclude by the end of February.

Principals, school nurses and 2nd grade teachers in the 21 elementary schools will be contacted ahead of time to facilitate the screening process. The screening will be presented to parents as a program to determine the distribution of blood pressure readings in normal children enrolled in the school system, sponsored by the school health office. Parents will receive a brief questionnaire regarding family history, the child's birth and medical history and identification of a primary care physician. School district lawyers have ruled that parental permission is not required. Blood pressure readings greater than the 95th percentile for 7 year olds will be reported directly to the appropriate primary physician to be dealt with as he or she deems necessary. Parents of children with high readings and no known physician will be contacted via the school nurse and definite arrangements for referral will be made. Care will be taken not to alarm parents without good reason.

Data obtained will be used to study blood pressure distribution and correlate high readings with potentially predictive factors such as obesity, race and family history. Longitudinal data would be particularly valuable considering the insidious natural history of hypertension. We intend to initiate annual screening of 2nd graders for several years if this study proves successful. Eventually 6th or 8th graders may be screened making standardized data available on a large population over a long period of time. Results

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will be available to the school department and any interested party. This project has the approval of the Providence Public School System Health Office, the Superintendent of Schools and the Rhode Island Medical Society Child School Health Care Committee.

Mass screenings are not the answer to preventing complications of Hypertension in childhood. There is the potential of erroneously labeling a child hypertensive with resultant psychological damage and ethical implications. Community and medical resources can be better utilized in more cost-beneficial approaches to hypertension control because the prevalence of high blood pressure in the pediatric age group is so low. It must be emphasized that there is no substitute for regular blood pressure evaluation as an essential component of pediatric health care.

We hope that our efforts will serve to increase public awareness, provide a service to the school system and its children, produce useful epidemiologic data, further our own education, and possibly discover a few untreated cases of pediatric hypertension.

John Sheppard
Brown University Program in Medicine
Class of 1978

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THREE SENTENCE ESSAY

There are three things wrong with getting old. One is that you lose your memory. The other two I forget.

. . . Old joke

ONE SENTENCE ESSAY

(Split Infinitivewise)

To err is human; to really foul things up requires a computer.

. . . Anon

What's New?

Physicians may hear a tape recording giving information about irradiation-related thyroid cancer through a toll-free Dial Access phone information service in Houston, TX.

The four-minute tape gives recommended evaluation and follow-up procedures to be used for individuals who may have been exposed to thyroid cancer following irradiation to the head and neck area in the 1940's and 1950's.

To hear the tape on irradiation-related thyroid cancer, physicians should call toll-free 1-800-231-6970 and ask for tape No. 998. The Dial Access system is operated by the University of Texas M. D. Anderson Hospital and Tumor Institute and is sponsored by the National Cancer Institute and the Southern Medical Association.

* * *

Searle has received FDA approval for marketing of Norpace (disopyramide phosphate), a new drug for treatment of serious and possibly life-threatening heart disorders. Preliminary approval was announced previously. Norpace is used in treatment of ventricular arrhythmias. It has already been introduced in Canada, Germany, Britain and Switzerland.

* * *

Smith Kline & French Laboratories announces FDA approval of Tagamet (cimetidine) a new drug with promising curative effects on duodenal ulcer disease. Clinical investigation of the drug in the U.S. as well as clinical experience in nine other countries, has been favorable.

* * *

Fisons is introducing its antitussive "cough stopper," Tusscapine chewable tablets, to the occupational health field. Tusscapine has been marketed to the consumer market for the past 18 months. It is a single entity and eliminates problems associated with drug interactions which might occur with other cough repressant products.

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Lilly announces a 600-mg tablet of Nalfon.® The new dosage form offers greater convenience and encourages greater patient compliance for those suffering from rheumatoid arthritis or osteoarthritis.

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Spectra Industries has a new and unique foot orthosis which provides universal adjustment in all planes. It is for children and, without the use of orthopedic shoes, provides for infinite internal and external rotation, up to 30 degree eversion or inversion adjustment, up to 30 degree dorsi or plantar flexion adjustment and adduction or abduction from 14 inches to 4 inches in 1-inch increments.

* * *

Litton Medical Electronics announces a new Servomed Oxymonitor for non-invasive monitoring of the partial oxygen tension in the blood. It provides continuous, transcutaneous measurements with the aid of a small transducer. It is applied directly to the skin and within 20 minutes provides real-time measurements in both digital and analog record trace.

* * *

Pilling has a new flexible bronchoscope. It features an angulation system with control knob and may be controlled with one hand. It has the narrowest available outside diameter and still has a relatively large inside diameter which will accommodate larger forceps than will other scopes. Forceps are calibrated in length so that over-penetration is avoided.

* * *

Ortho Pharmaceutical has a new prescription drug product, IMODIUM® (Ioperamide HCl), for the control and symptomatic relief of acute nonspecific diarrhea and of chronic diarrhea associated with inflammatory bowel disease. It will also reduce the volume of discharge from ileostomies. It does not contain atropine.

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Stuart Pharmaceuticals is introducing a 20 mg oral tablet of Sorbitrate® (isosorbide dinitrate). The new dosage form is intended for prophylactic treatment of angina patients who require high dosages of oral isosorbide.

* * *

Parke- Davis announces introduction of a new Reduced Venus Stasis (RVS) stockings. All RVS stockings have controlled graduated compression which reduces from ankle to thigh. The stockings have Custom-Stretch which makes fitting less critical and allows good fitting with smaller inventory.

* * *

Kendall has introduced the first completely closed system for unilateral ureteral drainage. It is compact and sterile and collects kidney and bladder urine in separate, calibrated compartments, each with its own drainport. Has a convenient irrigation port for aseptic irrigation of the ureteral catheter.

* * *

Cromolyn sodium, which has been distributed in the U.S. under the trade name "Aarana," will be distributed in the future by Fisons, which will also market cromolyn sodium under its brand name of Intal."

* * *

Control-o-fax Office Systems has introduced a new collection envelope for professional offices. It is known as "The Early-Payment" Envelope and is designed to encourage payment by patients at time of visit or before regular statement is sent. It features a detachable appointment Slip.

* * *

MacLevy Products is agent in this country for an exercise bicycle which is manufactured in Finland. The stationary cycle is the first to be equipped with an ergometer which accurately measures the work done and allows the patient to accomplish a progressive exercise program. The device is called the "Tunturi Ergometer Training Cycle."

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Maico Hearing Instruments announces three new behind-the-ear hearing aids. One is designed to eliminate feedback when volume is advanced to high levels. Another is the directional version of the first. The third newcomer is a high power, high gain instrument intended for moderate to severe hearing impairments.

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Mediscience Technology has developed the 100CER Cardiac Event Recorder which gives the advantages of a 24-hour continuous tape recorder by recording only the significant runs. Only abnormalities trigger the continuous tape, which can be replayed at will. The device weighs less than two pounds and can be comfortably worn at the waist.

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CIGARETTE SMOKING AND CANCER OF THE LUNG

(Continued from page 591)

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Precautions: In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (*e.g.*, excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

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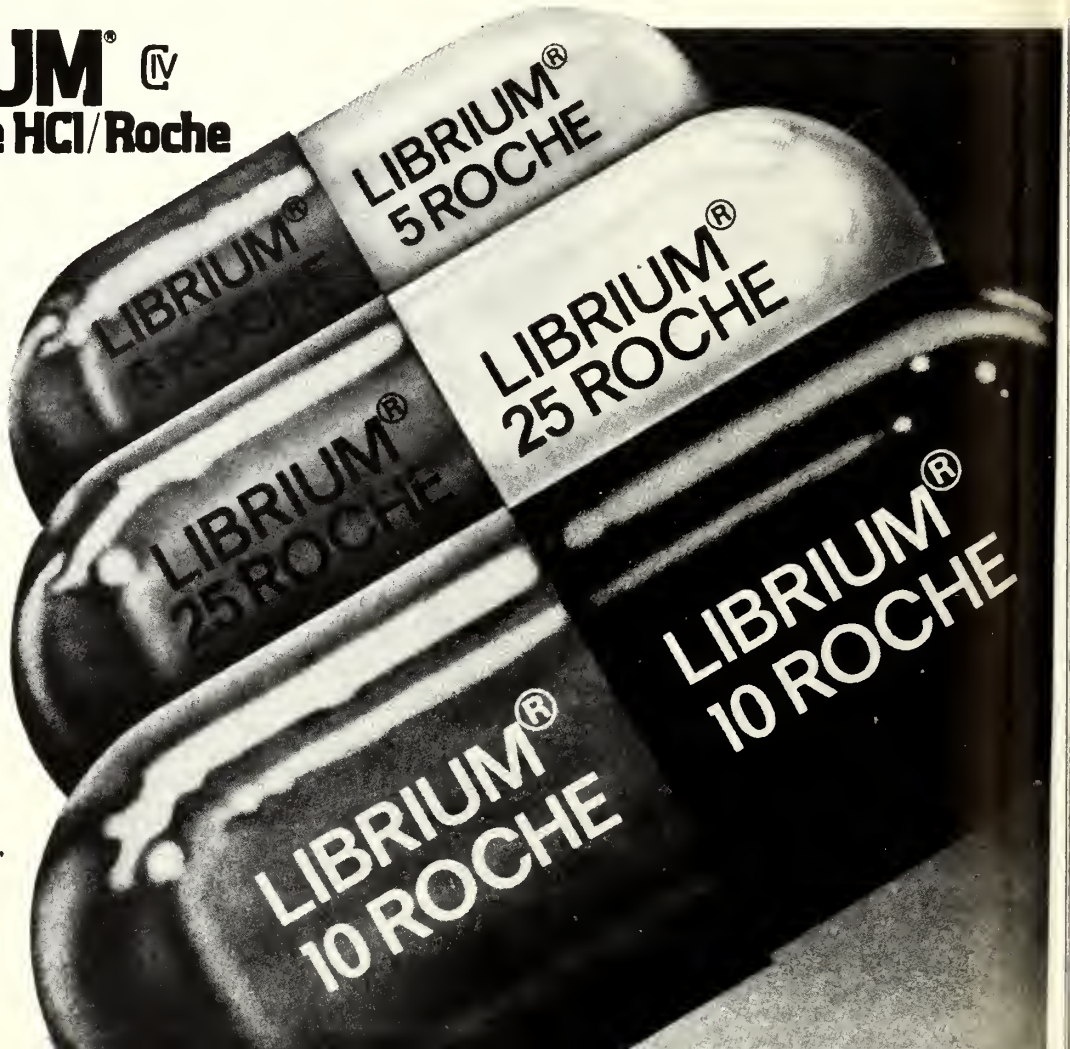
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